DVP-NS305/NS310/NS315/ NS405/NS410/NS415

RMT-D141A/D142A/D142O/D142P

SERVICE MANUAL

Self Diagnosis Supported model

Photo : DVP-NS415
RMT-D142A

US Model
Canadian Model
DVP-NS315/NS415
AEP Model
DVP-NS305/NS310/NS405/NS410
UK Model
DVP-NS305/NS405
Russian Model
Hong Kong Model
Korea Model
Taiwan Model
Saudi Arabia Model
GA Model
Indian Model
Pakistan Model
Malaysia Model
DVP-NS305
Middle East Model
Oceania Model
DVP-NS305/NS415
PX Model
Mexico Model
Latin Model
Argentina Model
Brazilian Model
DVP-NS315

SPECIFICATIONS

System

Laser: Semiconductor laser
Signal format system: NTSC/PAL
(To change the color system)

Audio characteristics

Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (±1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)/CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT (L/R) AUDIO jacks only)

Harmonic distortion: 0.003 %
Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB
Wow and flutter: Less than detected value (±0.001% W PEAK)

The signals from LINE OUT L/R (AUDIO) jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Outputs/Inputs (DVP-NS315/NS415)

Outputs (DVP-NS305/NS310/NS405/NS410)

(**Jack name:** Jack type/Output or Input level/ Load impedance)
LINE IN (AUDIO)*: Phono jack/–/47 kilohms (DVP-NS315/NS415)
LINE OUT (AUDIO): Phono jack/2 Vrms/ Over 10 kilohms
DIGITAL OUT (OPTICAL)*: Optical output jack/–18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/ 0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT(Y, P_B, P_R): Phono jack/Y: 1.0 Vp-p/P_B, P_R: 0.7 Vp-p/ 75 ohms (DVP-NS315/NS415)
LINE IN (VIDEO)*: Phono jack/1.0 Vp-p/ 75 ohms (DVP-NS315/NS415)
LINE OUT (VIDEO): Phono jack/1.0 Vp-p/ 75 ohms
S VIDEO OUT: 4-pin mini DIN/Y: 1.0 Vp-p, C: 0.286 Vp-p/75 ohms
* DVP-NS405/NS410/NS415 only

General

Power requirements: 120 V AC, 60 Hz/ 110 to 240V AC, 50/60 Hz
See page 1-1 for further information.
Power consumption: 12 W/13 W
See page 1-1 for further information.
Dimensions (approx.): 430 × 62 × 255 mm (17 × 2 1/2 × 10 1/8 in.) (width/height/ depth) incl. projecting parts
Mass (approx.): 2.3 kg (5 5/64 lb)
Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)
Operating humidity: 25 % to 80 %

Supplied accessories

See page 1-3.

Specifications and design are subject to change without notice.

ENERGY STAR® is a U.S. registered mark. As an ENERGY STAR® Partner, Sony Corporation has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

DVD VIDEO
COMPACT disc DIGITAL VIDEO

CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion.
   Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

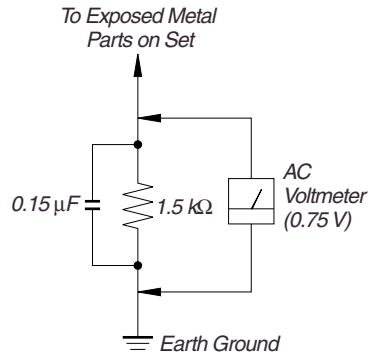

Fig. A. Using an AC voltmeter to check AC leakage.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA TW-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

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1. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow A. (See Fig. 1)
2) Draw out the tray in the direction of the arrow B, and remove a disc. (See Fig. 1)

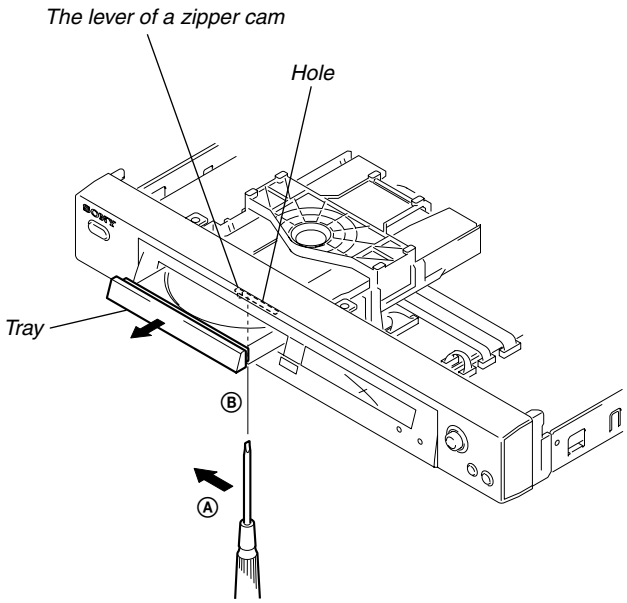
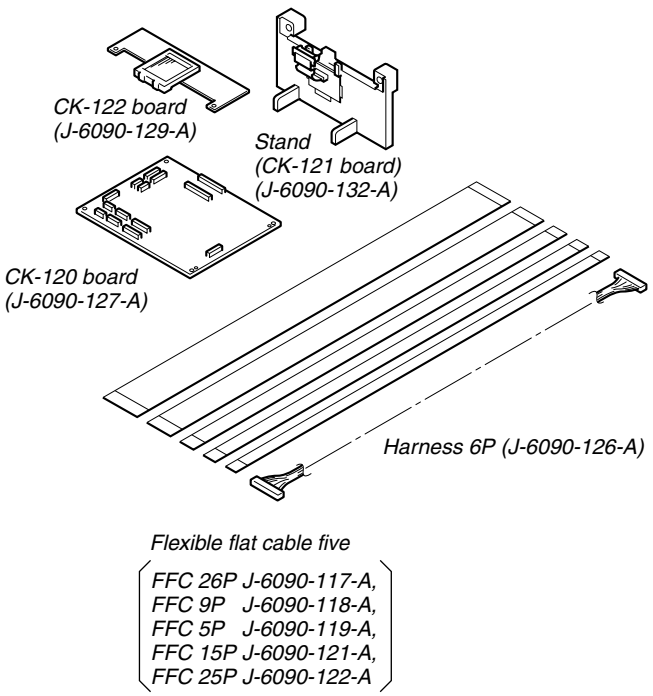


Fig. 1.

2. HOW TO SERVICE MB-103 BOARD

• Jig



Flexible flat cable five

FFC 26P J-6090-117-A,
FFC 9P J-6090-118-A,
FFC 5P J-6090-119-A,
FFC 15P J-6090-121-A,
FFC 25P J-6090-122-A

1) Remove the upper case from the main unit. (Refer to 2-1)
2) Remove the MB-103 board. (Refer to 2-7)
3) Set the removed MB-103 board and CK-122 board to the stand as shown in Fig. 2.

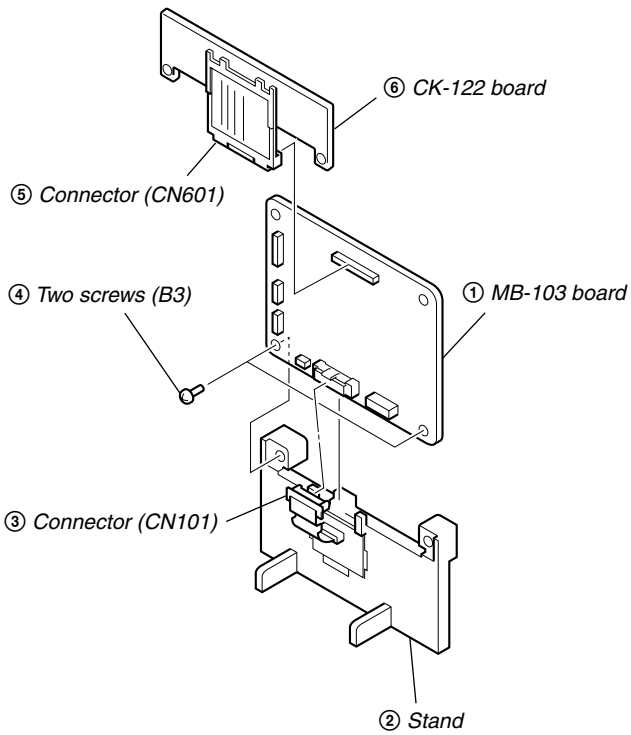


Fig. 2.

4) Fix the CK-120 board to the location where the MB-103 board is removed.

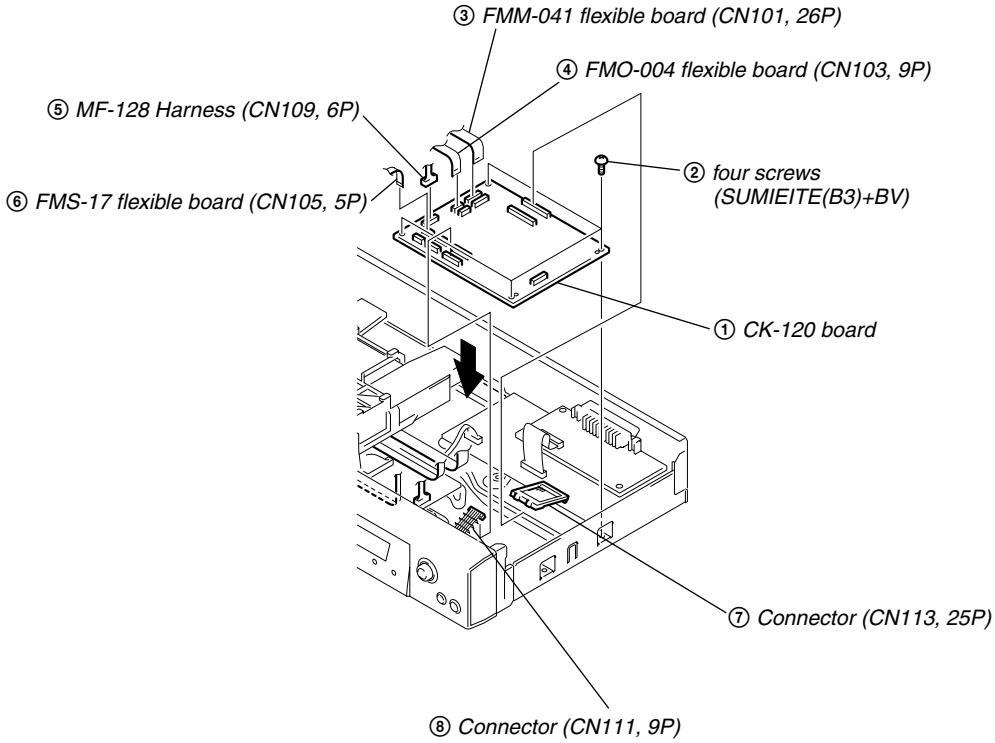

③ FMM-041 flexible board (CN101, 26P)
④ FMO-004 flexible board (CN103, 9P)
⑤ MF-128 Harness (CN109, 6P)
⑥ FMS-17 flexible board (CN105, 5P)
② four screws
(SUMIEITE(B3)+BV)
① CK-120 board
⑦ Connector (CN113, 25P)
⑧ Connector (CN111, 9P)

Fig. 3.

5) Set the five flexible flat cables and the harness as shown in Fig. 4 and Fig. 5.

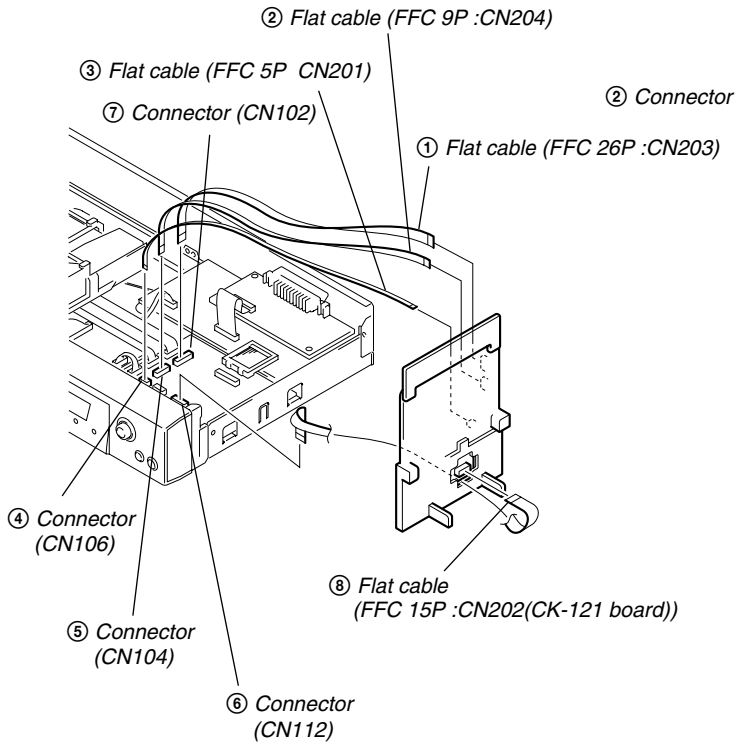


Fig. 4.

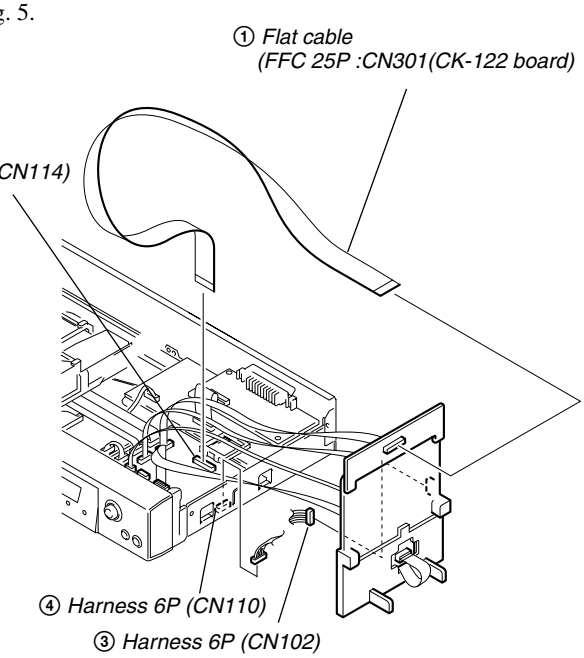


Fig. 5.

6) Set complete!

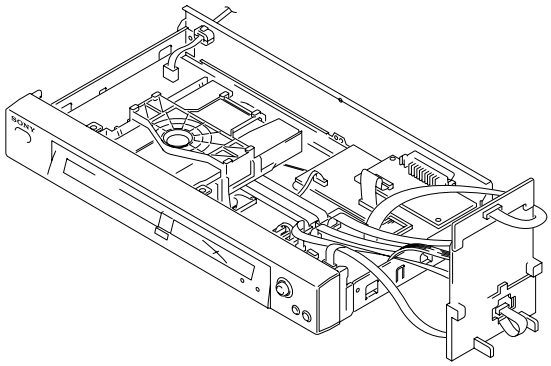


Fig. 6.

MEMO

SECTION 1
GENERAL

This section is extracted from instruction manual. (DVP-NS315/NS415 : 3-073-379-11)

Precautions

- The power requirements and power consumption of this player are indicated on the back of the player. Check that the player's operating voltage is identical with your local power supply.

Power requirements and power consumption →

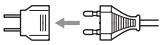
On safety
- Caution – The use of optical instruments with this product will increase eye hazard.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
- The player is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.
- Should the AC power cord need to be changed, have it done at a qualified service shop only.

On placement
- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.

For the model supplied with the AC plug adaptor

If the AC plug of your unit does not fit into the wall autlet, attach the supplied AC plug adaptor.



On operation
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.
If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are especially susceptible to this.

About this Manual

Check your model name

The instructions in this manual are for the 2 models: DVP-NS315 and DVP-NS415. Check your model name by looking at the front panel of the player. DVP-NS415 is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "DVP-NS415 only."

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- The meaning of the icons used in this manual is described below:

Icon	Meaning
DVD	Functions available for DVD VIDEOs or DVD-Rs/DVD-RWs in video mode
VCD	Functions available for VIDEO CDs or CD-Rs/CD-RWs in video CD format
DATA CD	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)
CD	Functions available for music CDs or CD-Rs/CD-RWs in music CD format

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO/MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs	
DVD VIDEO	DVD VIDEO
VIDEO CD	COMPACT disc DIGITAL VIDEO
Music CD	COMPACT disc DIGITAL AUDIO

The "DVD VIDEO" logo is a trademark.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labeled with identical region codes. This system is used to protect copyrights.

DVDs labeled (2) will also play on this player.

If you try to play any other DVD, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by area restrictions.

Example of discs that the player cannot play

The player cannot play the following discs:
- All CD-ROMs (including PHOTO CDs)/ CD-Rs/CD-RWs other than those recorded in the following formats:
  – music CD format
  – video CD format
  – MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-RWs in VR mode
- DVD-ROMs
- DVD Audio discs
- HD layer on Super Audio CDs

* A logical format of files and folders on CD-ROMs, defined by ISO (International Standard Organization).

Also, the player cannot play the following discs:
- A DVD with a different region code.
- A disc recorded in a color system other than NTSC, such as PAL or SECAM (this player conforms to the NTSC color system).
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Note

Some CD-Rs, CD-RWs, DVD-Rs, or DVD-RWs (in video mode) cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device. Furthermore, the disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played.

Note on playback operations of DVDs and VIDEO CDs

Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes about the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the center out.

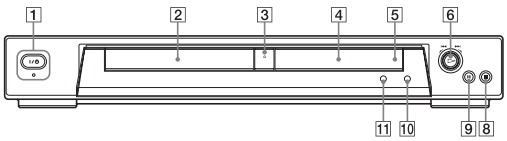
- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

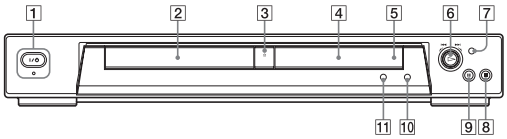
For more information, refer to the pages indicated in parentheses.

Front panel

DVP-NS315



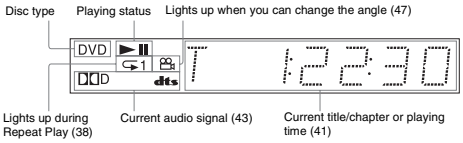
DVP-NS415



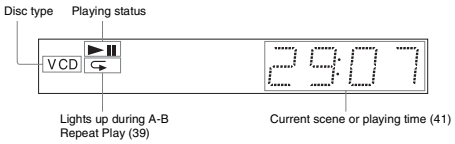
1 **I/⏻** (on/standby) button/indicator (27)
Lights up in green when the power is on and lights up in red when the player is in standby mode.
2 Disc tray (27)
3 ⏏ (open/close) button (27)
4 Front panel display (9)
5 (remote sensor) (15)
6 Playback Dial (DVP-NS315) (28) (30)
Multi-mode Playback Dial (DVP-NS415) (28) (30)
7 MODE CHANGE button (DVP-NS415 only) (30)
8 ■ (stop) button (28)
9 ❚❚ (pause) button (28)
10 SURROUND button (44)
11 PICTURE MODE button (49)

Front panel display

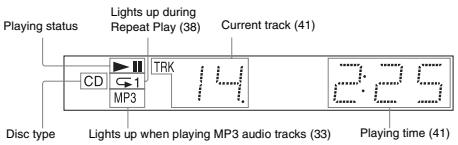
When playing back a DVD



When playing back a VIDEO CD with Playback Control (PBC) (32)



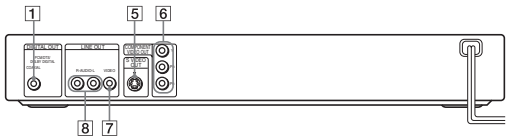
When playing back a CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



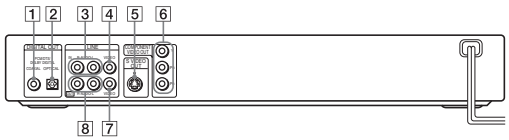
➞continued

Rear panel

DVP-NS315



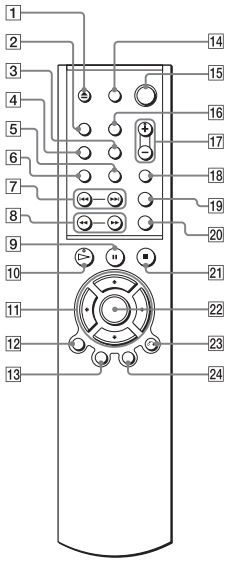
DVP-NS415



1 DIGITAL OUT (COAXIAL) jack (22) (23) (24)
2 DIGITAL OUT (OPTICAL) jack (DVP-NS415 only) (22) (23) (24)
3 LINE IN L/R (AUDIO) jacks (DVP-NS415 only) (16) (18)
4 LINE IN (VIDEO) jack (DVP-NS415 only) (16) (18)
5 S VIDEO OUT jack (18)
6 COMPONENT VIDEO OUT jacks (18)
7 LINE OUT (VIDEO) jack (18)
8 LINE OUT L/R (AUDIO) jacks (21) (22) (23)

Remote

DVP-NS315

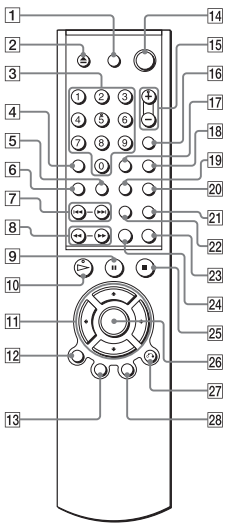


1 ⏏ OPEN/CLOSE button (28)
2 SUR (surround) button (44)
3 SUBTITLE button (47)
4 AUDIO button (43)
5 ANGLE button (47)
6 CLEAR button (35)
7 ⏮/⏭ PREV/NEXT (previous/next) buttons (28)
8 ◄◄/►► SCAN/SLOW buttons (29)
9 ❚❚ PAUSE button (28)
10 ▷ PLAY button (27)
The ▷ button has a tactile dot.*
11 ←/↑/↓/→ buttons (32)
12 DISPLAY button (13)
13 TOP MENU button (32)
14 TV I/⏻ (on/standby) button (55)
15 I/⏻ (on/standby) button (27)
16 PICTURE MODE button (49)
17 VOL (volume) +/– buttons (55)
The + button has a tactile dot.*
18 TV/VIDEO button (55)
19 SEARCH MODE button (40)
20 REPLAY button (28)
21 ■ STOP button (28)
22 ENTER button (25)
23 ↩ RETURN button (32)
24 MENU button (32) (33)

* Use the tactile dot as a reference when operating the player.

➞continued

DVP-NS415



1 TV I/⏻ (on/standby) button (55)
2 ⏏ OPEN/CLOSE button (28)
3 Number buttons (32)
The number 5 button has a tactile dot.*
4 CLEAR button (35)
5 SUBTITLE button (47)
6 AUDIO button (43)
7 ⏮/⏭ PREV/NEXT (previous/next) buttons (28)
8 ◄◄ ◄◄/►► ►► SCAN/SLOW buttons (29)
9 ❚❚ PAUSE button (28)
10 ▷ PLAY button (27)
The ▷ button has a tactile dot.*
11 ←/↑/↓/→ buttons (32)
12 DISPLAY button (13)
13 TOP MENU button (32)
14 I/⏻ (on/standby) button (27)
15 VOL (volume) +/– buttons (55)
The + button has a tactile dot.*
16 TV/VIDEO button (55)
17 ENTER button (performs the same function as 26)
18 PICTURE MODE button (49)
19 ANGLE button (47)
20 SUR (surround) button (44)
21 TIME/TEXT button (41)
22 REPEAT button (38)
23 REPLAY button (28)
24 SEARCH MODE button (40)
25 ■ STOP button (28)
26 ENTER button (25)
27 ↶ RETURN button (32)
28 MENU button (32) (33)

* Use the tactile dot as a reference when operating the player.

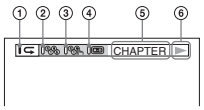
Guide to On-Screen Displays (Control Bar)

The following explains the Control Bar. The Control Bar is used for making adjustments to the settings or displaying information during playback.
The displayed contents differ according to the type of disc being played. The numbers in parentheses indicate reference pages.

Displaying the Control Bar during playback

The following displays appear when the DISPLAY button is pressed repeatedly during playback. You can select the setting that suits the current playback item and view the related information.

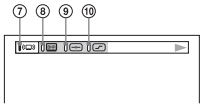
◆Display 1
The following play modes ①–④ can be set. The indicator lights up in blue when activated.
Example: When Repeat Play is selected. (The display will differ when A-B Repeat Play is set.)



① Repeat Play (38)
② Shuffle Play (37)
③ Program Play (35)
④ A-B Repeat Play (39)
⑤ Unit being repeated in this example.
⑥ Playback status (►Playback, ❚❚Pause, ■Stop, etc.)

⬇

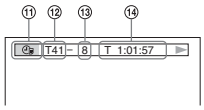
◆Display 2
The following play modes ⑦–⑩ can be set. The indicator lights up in blue when activated.
Example: When "TVS" is set.



⑦ TVS (44)
⑧ "BNR" (48)
⑨ "CUSTOM PICTURE MODE" (49)
⑩ "DIGITAL VIDEO ENHANCER" (50) (DVP-NS415 only)

⬇

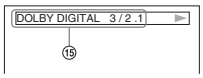
◆Display 3
The following playback information is displayed.
Example: When playing a DVD.



⑪ TIME/TEXT icon
⑫ Title number of the DVD (40)
⑬ Chapter number of the DVD (40)
⑭ Playing time or remaining time (41)

⬇

◆Display 4 (DVD playback only)



⑮ Format of the current audio signal (43)

⬇

◆No display

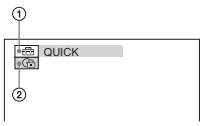
⬇

◆Return to Display 1

Displaying the Control Bar in stop mode

The following displays appear when the DISPLAY button is repeatedly pressed during stop mode. You can make basic adjustments and customize the player to suit your viewing preferences.

◆Display 1
The following settings can be made.

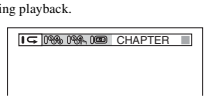


① SETUP (57)
- Select QUICK to make the minimum number of basic adjustments for using the player.
- Select CUSTOM to make a full range of adjustments.
- Select RESET to return the SETUP adjustments to the default settings.

② PARENTAL CONTROL (51)
- Set this to limit the playback of selected discs on this player.

⬇

◆Display 2
Shows the same information as Display 1 during playback.

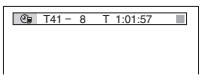


⬇

◆Display 3
Shows the same information as Display 2 during playback.

⬇

◆Display 4
Shows the same information as Display 3 during playback.



⬇

◆No display

⬇

◆Return to Display 1

Simple Start Guide

Quick Overview

A quick overview presented in this guide will give you enough information to start using the player for your enjoyment. To use the surround sound features of this player, refer to "Hookups" on page 18.

Notes

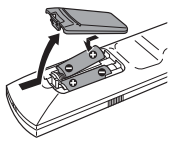
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power of each component before connecting.

Step 1: Unpacking

Check that you have the following items:
- Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- A plug adapter is included with some models.

Step 2: Inserting Batteries into the Remote

You can control the player using the supplied remote. Insert two Size AA (R6) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the compartment.
When using the remote, point it at the remote sensor R on the player.

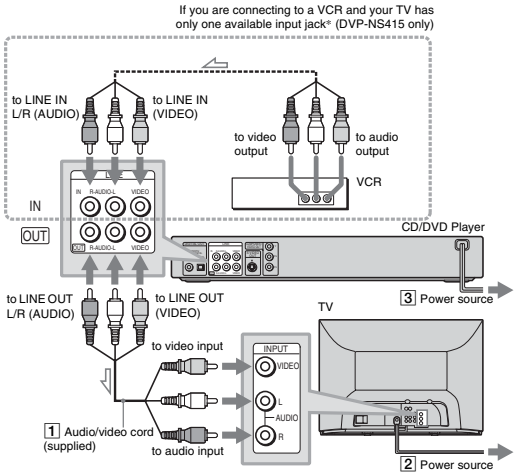


Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

Step 3: TV Hookups

Connect the supplied audio/video cord and the power cord in the order (1~3) shown below. Be sure to connect the power cord last.



*** If you are connecting a VCR and your TV has only one available input jack (DVP-NS415 only)**

If your TV has only one available input jack, connect your VCR or similar device to the LINE IN jacks on the player. In order to view the pictures from your VCR, the DVD player must be in standby mode. Note that the DVD player will only pass signals through the LINE jacks and will not output the VCR signals from any other jack.
If your TV has more than one available input jack, connect your VCR directly to your TV.

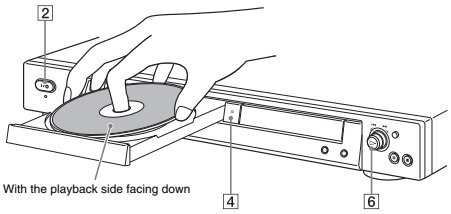
When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen.
If you want to change the aspect ratio, please refer to page 59.

When connecting to a monaural TV

Use a stereo-mono conversion cord (not supplied). Connect the LINE OUT (VIDEO) jack on the player to the TV's video input jack, and connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

Step 4: Playing a Disc



1 Turn on the TV.

2 Press I/⏻ on the player.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

4 Press ⏏ on the player to open the disc tray.

5 Place the disc on the tray with the playback side facing down.

6 Press ▷.

The disc tray closes and the player begins playing the disc.

After Step 6

Depending on the disc, a menu may be displayed on the TV screen. If so, select the item you want from the menu and play the DVD (page 32) or VIDEO CD disc (page 32).

To stop playing

Press ■.

To remove the disc

Press ⏏.

To turn off the player

Press I/⏻. The player enters standby mode and the power indicator lights up in red.

Hooking Up the Player

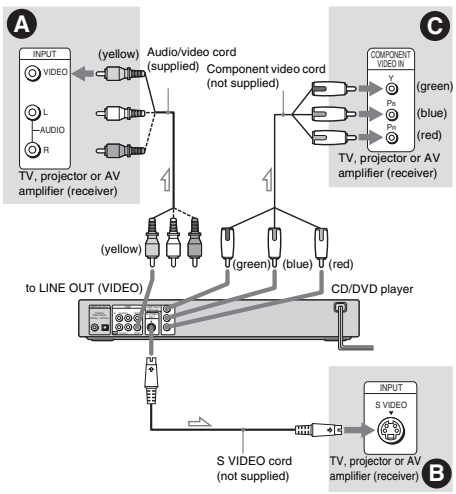
Follow Steps 1 to 4 to hook up and adjust the settings of the player.
Before you start, disconnect the power cords, check that you have all of the supplied accessories, and insert the batteries into the remote (page 15).

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.

Step 1: Connecting the Video Cords

Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns Ⓐ through Ⓒ, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).



: Signal flow

Ⓐ If you are connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.

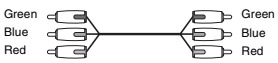
Use the red and white plugs to connect to the audio input jacks (page 21). (Do this if you are connecting to a TV only.)

Ⓑ If you are connecting to an S VIDEO input jack

Connect an S VIDEO cord (not supplied). You will enjoy high quality images.

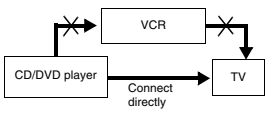
Ⓒ If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, P_B, P_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images.

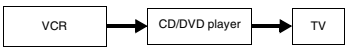


Notes

- Connect the player directly to the TV. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen.



- If your TV has only one available audio/video input jack, connect the VCR to the LINE IN jacks on the player (DVP-NS415 only). In order to view the pictures from your VCR, the DVD player must be in standby mode (page 16).



Step 2: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, A through D.

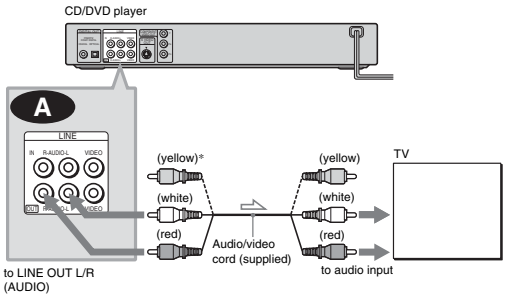
Components to be connected	Connection
TV	A (page 21)
Stereo amplifier (receiver) (having L and R audio input jacks only, or having a digital input jack) • 2 speakers (front L and R)	B (page 22)
MD deck/DAT deck	B (page 22)
AV amplifier (receiver) with a Dolby* Surround (Pro Logic) decoder (having L and R audio input jacks only, or having a digital input jack) • 3 speakers (front L and R, and rear (monaural)) or • 6 speakers (front L and R, center, rear L and R, subwoofer)	C (page 23)
AV amplifier (receiver) having a Dolby Digital or DTS decoder and a digital input jack** • 6 speakers (front L and R, center, rear L and R, subwoofer)	D (page 24)

* Manufactured under license from Dolby Laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.

** "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

A Connecting to your TV

This connection will use your TV speakers for sound.



* The yellow plug is used for video signals (page 18).

◆Recommended surround sound effects for this connection

- TVS DYNAMIC (page 45)
- TVS WIDE (page 45)

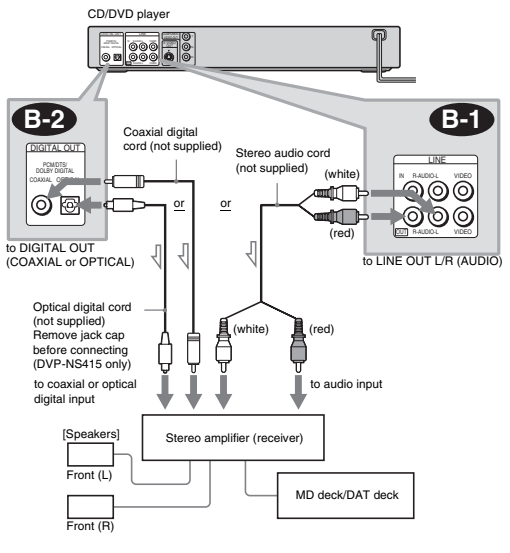
Hint

When connecting to a monaural TV, use a stereo-mono conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

➡continued

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

If the stereo amplifier (receiver) has audio input jacks L and R only, use B-1. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use B-2. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



◆Recommended surround sound effects for the B-1 connection only

- TVS STANDARD (page 45)

Hint

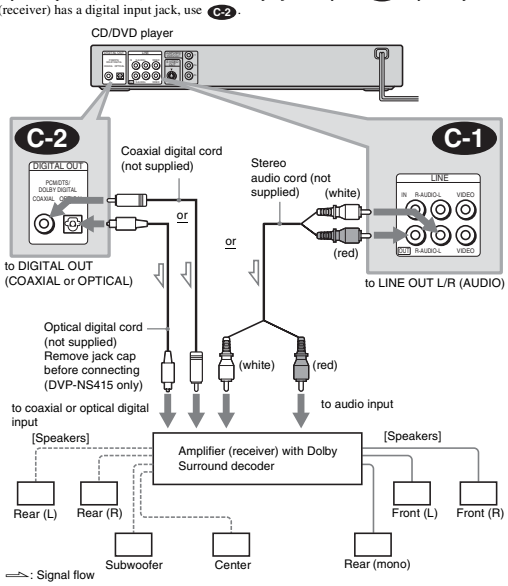
In connection B-1, you can use the supplied audio/video cord instead of using a separate audio cord.

Note

If you select one of the TVS effects (page 44) while playing a disc, no sound will come from your speakers with the B-2 connection.

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.
If your amplifier (receiver) has L and R audio input jacks only, use C-1. If your amplifier (receiver) has a digital input jack, use C-2.



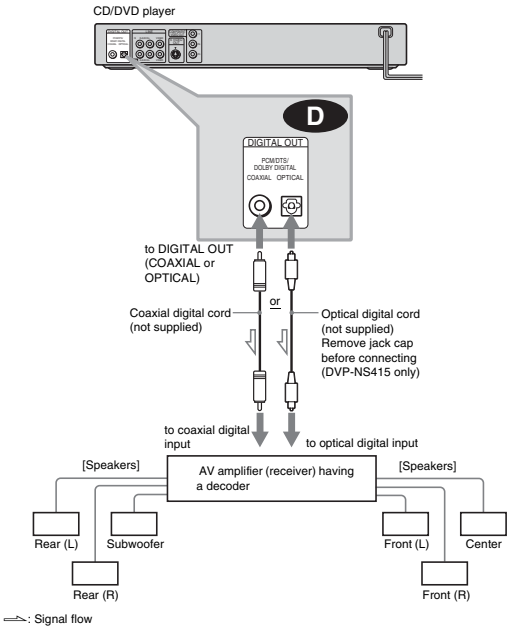
Note

When connecting 6 speakers, replace the monaural rear speaker with a center speaker, 2 rear speakers and a subwoofer.

➡continued

D Connecting to an AV amplifier (receiver) with a digital input jack having a Dolby Digital or DTS decoder and 6 speakers

This connection will allow you to use the Dolby Digital or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the surround sound effects of this player.



: Signal flow

Note

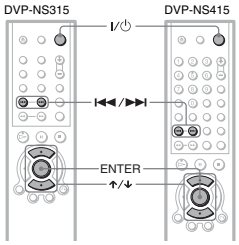
After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "ON" (page 25) in Quick Setup. Otherwise, no sound or a loud noise will come from the speakers.

Step 3: Connecting the Power Cord

Plug the player and TV power cords into an AC outlet.

Step 4: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press ▶▶|. To return to the previous adjustment, press |◀◀.



1 Turn on the TV.

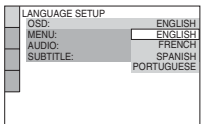
2 Press I/⏻.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

"Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Bar to run Quick Setup (page 58).

4 Press ENTER without inserting a disc.

The Setup Display for selecting the language used in the on-screen display appears.

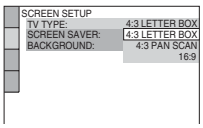


5 Press ↑/↓ to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



7 Press ↑/↓ to select the setting that matches your TV type.

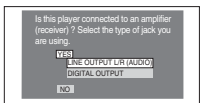
◆ If you have a 4:3 standard TV
- 4:3 LETTER BOX or 4:3 PAN SCAN (page 59)

◆ If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
- 16:9 (page 59)

8 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.

➡continued


Is this player connected to an amplifier (receiver) ? Select the type of jack you are using.
YES
LINE OUTPUT L/R (AUDIO)
DIGITAL OUTPUT
NO

9 Press ↑/↓ to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 21 to 24 (A through D).

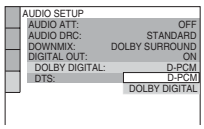
A
- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.

B-1 C-1
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.

B-2 C-2 D
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

10 Press ↑/↓ to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

Choose the signal that matches the audio connection you selected on pages 22 to 24 (B through D).

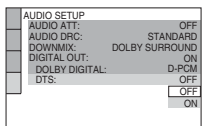


B-2 C-2
- D-PCM (page 62)

D
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 62)

11 Press ENTER.

"DTS" is selected.



12 Press ↑/↓ to select whether or not you wish to send a DTS signal to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 22 to 24 (B through D).

B-2 C-2
- OFF (page 62)

D
- ON (only if the amplifier (receiver) has a DTS decoder) (page 62)

13 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 22 to 24 (B through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 57 for using the Setup Display.

Audio Connection (pages 21 to 24)

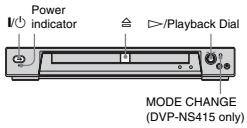
A
- No additional settings are needed.

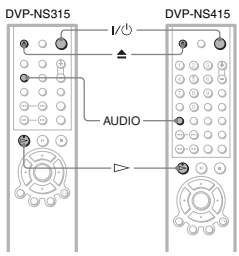
B-1 C-1
- Set "DOWNMIX" to "DOLBY SURROUND" (page 61)
- If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 61)

B-2 C-2 D
- Set "DOWNMIX" to "DOLBY SURROUND" (page 61)
- Set "DIGITAL OUT" to "ON" (page 61)

Playing Discs DVD VCD CD DATA-CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.





1 Turn on your TV.

2 Press I/⏻.

The player turns on and the power indicator lights up in green.

3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press ⏏ on the player, and place a disc on the disc tray.

With the playback side facing down

5 Press ▷.

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).
Depending on the disc, a menu may appear on the TV screen. For DVDs, see page 32. For VIDEO CDs, see page 32.

To turn off the player

Press I/⏻. The player enters standby mode.

Hint

You can have the player turn off automatically whenever you leave it in stop mode for more than 30 minutes. To turn on this function, set "AUTO POWER OFF" in "CUSTOM SETUP" to "ON" (page 60).

Notes on playing DTS sound tracks on a CD
- When playing DTS-encoded CDs, excessive noise will be heard from the analog stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo jacks of the player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the player.
- Set the sound to "STEREO" using the AUDIO button when you play DTS sound tracks on a CD (page 43).
- Do not play DTS sound tracks without first connecting the player to an audio component having a built-in DTS decoder. The player outputs the DTS signal via the DIGITAL OUT (COAXIAL or OPTICAL) jack even if "DTS" in "AUDIO SETUP" is set to "OFF" in the Setup Display (page 62),

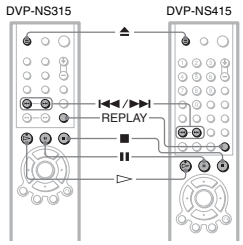
➡continued

and may affect your ears or cause your speakers to be damaged.

Notes on playing DVDs with a DTS sound track

- DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
- When you play a DVD with DTS sound tracks, set "DTS" to "ON" in "AUDIO SETUP" (page 62).
- If you connect the player to audio equipment without a DTS decoder, do not set "DTS" to "ON" in "AUDIO SETUP" (page 62). A loud noise may come out from the speakers, affecting your ears or causing the speakers to be damaged.

Additional operations



To	Operation
Stop	Press ■
Pause	Press II
Resume play after pause	Press II or ▷
Go to the next chapter, track, or scene in continuous play mode	Press ▶▶I on the remote, or briefly turn the Playback Dial* on the player clockwise
Go back to the previous chapter, track, or scene in continuous play mode	Press I◀◀ on the remote, or briefly turn the Playback Dial* on the player counterclockwise
Stop play and remove the disc	Press ⏏

To	Operation
Replay the previous scene (DVD only)	Press REPLAY

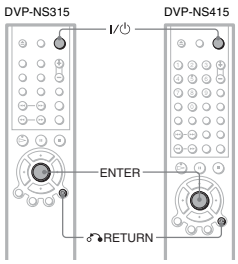
* Operable when the MODE CHANGE indicator lights up in green or turns off. For more details about the Multi-mode Playback Dial, see page 30 (DVP-NS415 only).

Hint
The Replay function is useful when you want to review a scene or dialog that you missed.

Note
You may not be able to use the Replay function with some scenes.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



When the player is in standby mode, press RETURN, ENTER, and then I/⏻ on the remote.
The player turns on and "LOCKED" appears on the front panel display.
The ⏏ button on the player or the remote does not work while the Child Lock is set.

To unlock the disc tray
When the player is in standby mode, press RETURN, ENTER, and then I/⏻ again.

Playback direction
×2▶ (DVD/CD only) → 1▶▶ → 2▶▶

Opposite direction
×2◀ (DVD only) → 1◀◀ → 2◀◀

The "×2▶"/"×2◀" playback speed is about twice the normal speed. The "2▶▶"/"2◀◀" playback speed is faster than "1▶▶"/"1◀◀."

Watching frame by frame (Slow-motion play) DVD VCD

Press ◀I ◀◀ or ▶▶ I▶ when the player is in pause mode. To return to the normal speed, press ▷.
Each time you press ◀I ◀◀ or ▶▶ I▶ during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:

Playback direction
2 I▶ ⟷ 1 I▶

Opposite direction (DVD only)
2 ◀I ⟷ 1 ◀I

The "2 I▶"/"2 ◀I" playback speed is slower than "1 I▶"/"1 ◀I."

Using the Playback Dial on the player (DVP-NS315 only) DVD VCD CD DATA-CD

You can search for a particular point on a disc in various ways using the Playback Dial.

To go to the next chapter/track/scene
During playback, briefly turn the Playback Dial clockwise to skip to the next chapter/track/scene, or counterclockwise to skip to the previous ones.

To locate a point quickly (Search)
During playback, turn and hold the Playback Dial clockwise to locate a point in the playback direction, or counterclockwise to locate a point in the opposite direction. When you find the point you want, release the dial to return to normal playback speed.

Using the Multi-mode Playback Dial on the player (DVP-NS415 only) DVD VCD CD DATA-CD

You can search for a particular point on a disc in various ways using the MODE CHANGE button.

To go to the next chapter/track/scene
During playback and with the MODE CHANGE indicator turned off, briefly turn the Multi-mode Playback Dial clockwise to skip to the next chapter/track/scene, or counterclockwise to skip to the previous ones. (The same operation can be made when the MODE CHANGE indicator lights up in green.)

To locate a point quickly (Search)
During playback and with the MODE CHANGE indicator turned off, turn and hold the Multi-mode Playback Dial clockwise to locate a point in the playback direction, counterclockwise to locate a point in the opposite direction. When you find the point you want, release the dial to return to normal playback speed.

To locate a specific title/chapter/track

1. Press MODE CHANGE repeatedly so that the indicator lights up in green.
2. During playback, turn and hold the Multi-mode Playback Dial clockwise to locate succeeding titles/chapters/tracks, or counterclockwise to locate preceding ones.

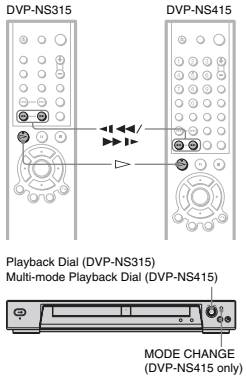
To play one frame at a time (Freeze Frame) DVD VCD

1. Press MODE CHANGE repeatedly so that the indicator lights up in amber.
2. During playback, turn the Multi-mode Playback Dial clockwise to go to the next frame, or counterclockwise to go to the previous frame. If you turn and hold the dial, you can view the frames in succession.

Note
Even if you select "RESET" under "SETUP" in the Control Bar (page 58), the disc tray remains locked.

Searching for a Particular Point on a Disc (Scan, Slow-motion Play, Search, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

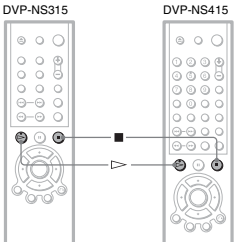
Locating a point quickly by playing a disc in fast forward or fast reverse (Scan) DVD VCD CD DATA-CD

Press ◀I ◀◀ or ▶▶ I▶ while playing a disc. When you find the point you want, press ▷ to return to normal speed. Each time you press ◀I ◀◀ or ▶▶ I▶ during scan, the playback speed changes. Three speeds are available. With each press the indication changes as follows:

➡continued

Resuming Playback from the Point Where You Stopped the Disc (Resume Play/Multi-disc Resume)

The player remembers the point where you stopped the disc.



Resuming playback for the current disc (Resume Play) DVD VCD CD DATA-CD

The player remembers the point where you stopped the disc even if the player enters standby mode by pressing I/⏻.

1. **While playing a disc, press ■ to stop playback.**
   "RESUME" appears on the front panel display.
2. **Press ▷.**
   The player starts playback from the point where you stopped the disc in Step 1.

Hint
To play from the beginning of the disc, press ■ twice, then press ▷.

Notes

- The point where you stopped playing is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
  – you open the disc tray (DVP-NS315 only).
  – you disconnect the power cord.
- When playing a CD, the point where you stopped is cleared when the disc tray is opened or the power cord is disconnected.
- When playing a DATA CD, the point where you stopped playing is cleared when the player enters standby mode, the disc tray is opened, or the power cord is disconnected.
- This function may not work with some discs.

Storing the point where you stopped the disc (Multi-disc Resume) (DVP-NS415 only) DVD VCD

The player stores the point where you stopped the disc and resumes playback from the same point the next time you insert the same disc. Resume playback points for up to 6 different DVD/VIDEO discs remain in memory even if you disconnect the power cord. When you store a resume playback point for the seventh disc, the resume playback point for the first disc is deleted.

Hints

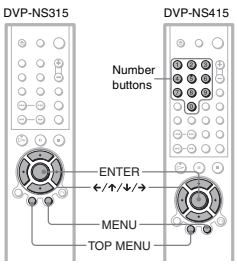
- To play from the beginning of the disc, press ■ twice, then press ▷.
- To turn off the Multi-disc Resume function, set "MULTI-DISC RESUME" in "CUSTOM SETUP" to "OFF" (page 60). Playback restarts at the resume point only for the current disc in the player.

Notes

- The point where you stopped playing is cleared when:
  – you change the play mode.
  – you change the settings on the Setup Display.
- This function may not work with some discs.

Using the DVD's Menu DVD

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button.
When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.



1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen.
The contents of the menu vary from disc to disc.

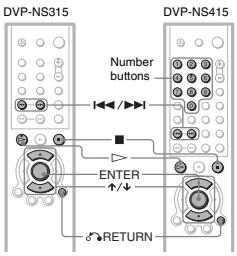
2 Press ←/↑/↓/→ to select the item you want to play or change.

You can also use the number buttons to select the item. (DVP-NS415 only)

3 Press ENTER.

Playing VIDEO CDs with PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Select the item number you want by pressing ↑/↓.

You can also use the number buttons to select the item number and track. (DVP-NS415 only)

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

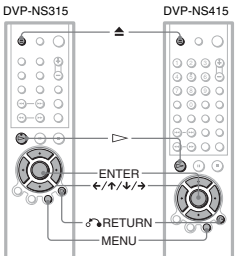
To return to the menu
Press RETURN.

Hint
To play without using PBC, press I◄◄ /►►I while the player is stopped to select a track, then press ▷ or ENTER.
"Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu.
To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER" in Step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ▷.

Playing an MP3 Audio Track DATA-CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 Press ⏏ and place a DATA CD on the disc tray.

2 Press ▷.

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

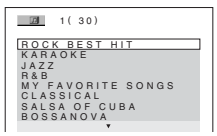
Notes
- This player can play MP3 audio tracks recorded in the following sampling frequencies: 32kHz, 44.1kHz, 48kHz.
- The playback order may be different from the edited order. See "The Playback order of MP3 audio tracks" below for details.

Selecting an album and track

1 Press MENU.

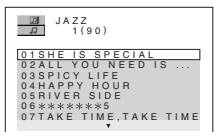
The list of MP3 albums recorded on the DATA CD appears.

➡continued



2 Select an album using ↑/↓ and press ENTER.

The list of tracks contained in the album appears.



3 Select a track using ↑/↓ and press ENTER.

The selected track starts playing.
When a track or album is being played, its title is shaded.

To go to the next or previous page
Press → or ←.

To return to the previous display
Press RETURN.

To turn off the display
Press MENU.

Notes
- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as an asterisk.
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs, CD-Rs, or CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.

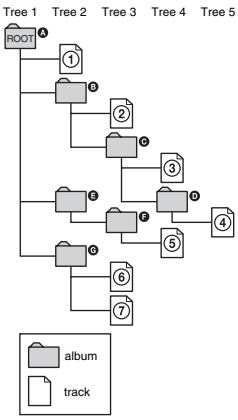
See the instructions of the CD-R/RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD
This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.
When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

Notes
- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The Playback order of MP3 audio tracks
The playback order of albums and tracks recorded on a DATA CD is as follows.

◆Structure of disc contents



When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: C contains D so ④ is played before ⑤.)
When you press MENU and the list of MP3 albums appears (page 33), the albums are arranged in the following order: A → B → C → D → F → G. Albums that do not contain tracks (such as album E) do not appear in the list.

Hints
- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, place your albums within the first two trees.

Notes
- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 200 albums and tracks in the DATA CD.
- The player can recognize up to 100 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 100 albums. Of the first 100 albums, the player will play no more than a combined total of 200 albums and tracks.

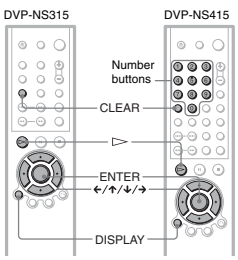
Various Play Mode Functions (Program Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:
- Program Play (page 35)
- Shuffle Play (page 37)
- Repeat Play (page 38)
- A-B Repeat Play (page 39)

Note
The play mode is canceled when:
– you open the disc tray.
– the player enters standby mode by pressing I/⏻.

Creating your own program (Program Play) DVD VCD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own program. You can program up to 99 titles, chapters, and tracks.

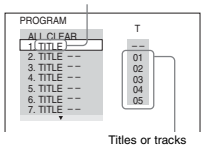


➡continued

1 Press DISPLAY twice while the player is in stop mode.
The following Control Bar appears.

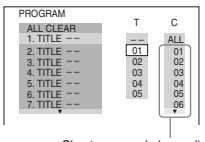
2 Press ←/→ to select (PROGRAM), then press ENTER.

"TRACK" is displayed when you play a VIDEO CD or CD.



Titles or tracks recorded on a disc

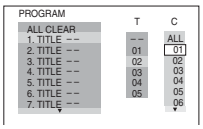
3 Press →.
The cursor moves to the title or track row "T" (in this case, "01").



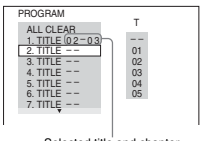
Chapters recorded on a disc

4 Select the title, chapter, or track you want to program.

◆ When playing a DVD
For example, select chapter "03" of title "02."
Press ↑/↓ to select "02" under "T," then press ENTER. You can also use the number buttons to select the number (DVD-NS415 only).



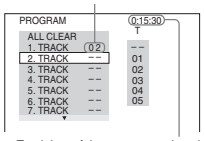
Next, press ↑/↓ to select "03" under "C," then press ENTER. You can also use the number buttons to select the number (DVD-NS415 only).



Selected title and chapter

◆ When playing a VIDEO CD or CD
For example, select track "02."
Press ↑/↓ to select "02" under "T," then press ENTER.

Selected track



Total time of the programmed tracks

5 To program other titles, chapters, or tracks, repeat Steps 3 to 4.
The programmed titles, chapters, and tracks are displayed in the selected order.

6 Press ▷ to start Program Play.
Program Play begins.
When the program ends, you can restart the same program again by pressing ▷.

To stop Program Play
Press CLEAR.

To turn off the display
Press DISPLAY repeatedly until the display is turned off.

To change or cancel a program

1 Follow Steps 1 and 2 of "Creating your own program (Program Play)."
2 Select the program number of the title, chapter, or track you want to change or cancel using ↑/↓, and press →. You can also use the number buttons to select the number (DVD-NS415 only).
3 Follow Step 4 for new programming. To cancel a program, select "--" under "T," then press ENTER.

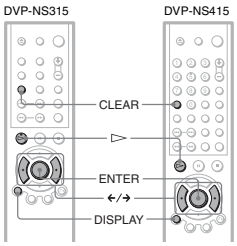
To cancel all the titles, chapters, or tracks in the programmed order

1 Follow Steps 1 and 2 of "Creating your own program (Program Play)."
2 Press ↑ and select "ALL CLEAR."
3 Press ENTER.

Hint
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Program Play, follow the steps of "Repeat Play" (page 38) or "Shuffle Play" (page 37).

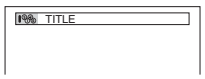
Playing in random order (Shuffle Play) DVD VCD CD

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



1 Press DISPLAY during playback.
The following Control Bar appears.

2 Press ←/→ to select (SHUFFLE), then press ENTER repeatedly to select the item to be shuffled.



◆ When playing a DVD
• TITLE
• CHAPTER

◆ When playing a VIDEO CD or CD
• TRACK

◆ When Program Play is activated
• ON: shuffles titles, chapters, or tracks selected in Program Play.

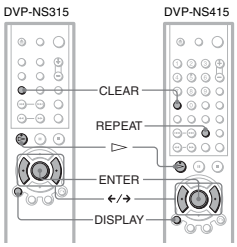
To return to normal play
Press CLEAR, or select "OFF" in Step 2.

To turn off the Control Bar
Press DISPLAY repeatedly until the Control Bar is turned off.

Hints
• You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press ▷. Shuffle Play starts.
• Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

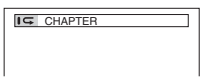
Playing repeatedly (Repeat Play) DVD VCD CD DATA-CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.
You can use a combination of Shuffle or Program Play modes.



1 Press DISPLAY during playback.
The following Control Bar appears.

2 Press ←/→ to select (REPEAT), then press ENTER repeatedly to select the item to be repeated.



◆ When playing a DVD
• DISC: repeats all of the titles.
• TITLE: repeats the current title on a disc.
• CHAPTER: repeats the current chapter.

◆ When playing a VIDEO CD or CD
• DISC: repeats all of the tracks.
• TRACK: repeats the current track.

◆ When playing a DATA CD (MP3 audio)
• DISC: repeats all of the albums.
• ALBUM: repeats the current album.
• TRACK: repeats the current track.

◆ When Program Play or Shuffle Play is activated
• ON: repeats Program Play or Shuffle Play.

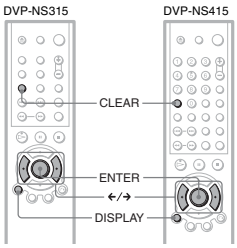
To return to normal play
Press CLEAR, or select "OFF" in Step 2.

To turn off the Control Bar
Press DISPLAY repeatedly until the Control Bar is turned off.

Hints
• You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press ▷. Repeat Play starts.
• You can select "REPEAT" directly by pressing REPEAT (DVD-NS415 only).

Repeating a specific portion (A-B Repeat Play) DVD VCD CD

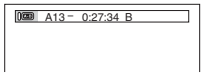
You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)



1 Press DISPLAY during playback.
The following Control Bar appears.

2 Press ←/→ to select (A-B REPEAT).

3 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



4 When you reach the ending point (point B), press ENTER again.
The set points are displayed and the player starts repeating this specific portion.

To return to normal play
Press CLEAR.

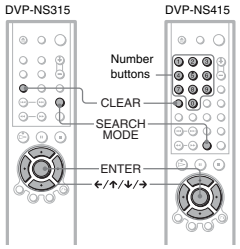
To turn off the Control Bar
Press DISPLAY repeatedly until the Control Bar is turned off.

Note
When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Program Play are canceled.

Searching for a Scene

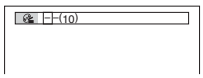
Searching for a Title/ Chapter/Track/Index/ Scene (Search mode) DVD VCD CD DATA-CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press SEARCH MODE.

The following display appears.
"-- (∗∗)" appears next to the icon (∗∗ refers to a number).
The number in parentheses indicates the total number of titles, tracks, indexes, scenes, etc. of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

◆ When playing a DVD

(TITLE), (CHAPTER), (TIME/TEXT), or (NUMBER INPUT)
Select "TIME/TEXT" to search for a starting point by inputting the time code.

◆ When playing a VIDEO CD

(TRACK) or (INDEX)

◆ When playing a VIDEO CD with PBC Playback

(SCENE)

◆ When playing a CD

(TRACK) or (INDEX)

◆ When playing a DATA CD (MP3 audio)

(ALBUM) or (TRACK)

3 Select the number of the title, track, scene, time code, etc. you want by pressing ↑/↓ to select the digit, followed by ←/→ to move the cursor.

For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, select "TIME/TEXT" in Step 2 and enter "2:10:20." You can also use the number buttons to select the number (DVP-NS415 only).

If you make a mistake

Cancel the number by pressing CLEAR, then select another number.

4 Press ENTER.

The player starts playback from the selected number.

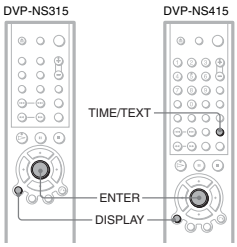
Hints

- If you are playing a disc and it is necessary to enter a number, select "NUMBER INPUT" in Step 2.
- When the display is turned off, you can search for a chapter (DVD) or track (CD) by pressing the number buttons and ENTER (DVP-NS415 only).

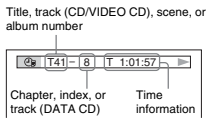
Viewing Information About the Disc

Checking the Playing Time and Remaining Time DVD VCD CD DATA-CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/CD text or track name (MP3 audio) recorded on the disc.



1 Press DISPLAY repeatedly during playback until (TIME/TEXT) appears.



2 Press ENTER repeatedly to change the time information.

The display and the kinds of time that you can change depend on the disc you are playing.

◆ When playing a DVD

- T ∗∗:∗∗:∗∗
  Playing time of the current title
- T–∗∗:∗∗:∗∗
  Remaining time of the current title
- C ∗∗:∗∗:∗∗
  Playing time of the current chapter
- C–∗∗:∗∗:∗∗
  Remaining time of the current chapter

◆ When playing a VIDEO CD (with PBC functions)

- ∗∗:∗∗
  Playing time of the current scene

◆ When playing a VIDEO CD (without PBC functions) or CD

- T ∗∗:∗∗
  Playing time of the current track
- T–∗∗:∗∗
  Remaining time of the current track
- D ∗∗:∗∗
  Playing time of the current disc
- D–∗∗:∗∗
  Remaining time of the current disc

◆ When playing a DATA CD (MP3 audio)

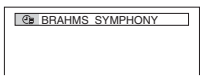
- ∗∗∗∗:∗∗
  Playing time of the current track

To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

To check the DVD/CD text or track name (MP3 audio)

Press ENTER repeatedly in Step 2 to display text recorded on the DVD/CD/DATA CD. The DVD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.
For DATA CDs, only the track name of the MP3 audio track appears.



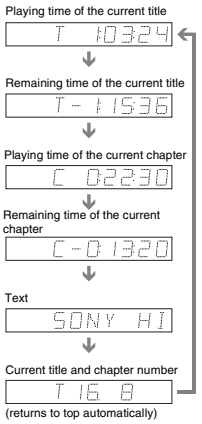
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you

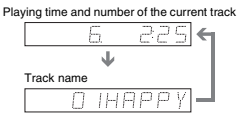
➡continued

change the time information on your TV screen.

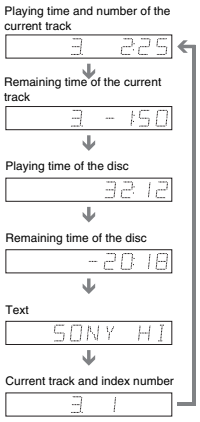
When playing a DVD



When playing a DATA CD (MP3 audio)



When playing a VIDEO CD (without PBC functions) or CD



Hints

- When playing VIDEO CDs with PBC functions, the scene number or the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text by pressing TIME/TEXT repeatedly (DVP-NS415 only).

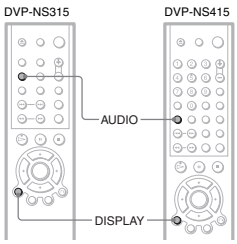
Notes

- Depending on the type of disc being played, the DVD/CD text or track name may not be displayed.
- The player can only display the first level of the DVD/CD text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

Sound Adjustments

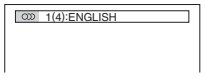
Changing the Sound DVD VCD CD DATA-CD

When playing a DVD recorded in multiple audio formats (PCM, Dolby Digital, or DTS), you can change the audio format. If the DVD is recorded with multilingual tracks, you can also change the language.
With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



1 Press AUDIO during playback.

The following display appears.
The number in parentheses indicates the total number of available audio signals.



2 Press AUDIO repeatedly to select the desired audio signal.

◆ When playing a DVD

Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 68 to see which language the code represents.
When the same language is displayed two or more times, the DVD is recorded in multiple audio formats.

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)

The default setting is underlined.

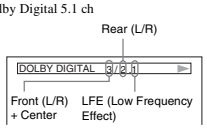
- STEREO: The standard stereo sound
- 1/L: The sound of the left channel (monaural)
- 2/R: The sound of the right channel (monaural)

Checking the audio signal format DVD

If you press DISPLAY repeatedly during playback, the format of the current audio signal (Dolby Digital, DTS, PCM, etc.) appears as shown below.

Example:

Dolby Digital 5.1 ch



About audio signals

Audio signals recorded in a disc contain the sound elements (channels) shown below. Each channel is output from a separate speaker.

- Front (L)
- Front (R)
- Center
- Rear (L)
- Rear (R)
- Rear (Monaural): This signal can be either the Dolby Surround Sound processed signals or the Dolby Digital sound's monaural rear audio signals.

➡continued

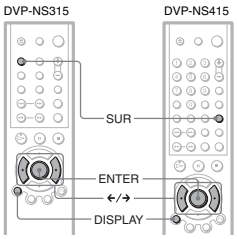
• LFE (Low Frequency Effect) signal

Note

If "DTS" is set to "OFF" in "AUDIO SETUP," the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 62).

TV Virtual Surround Settings (TVS) DVD

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers. TVS was developed by Sony to produce surround sound for home use using just a stereo TV.
This function is designed to work with the LINE OUT L/R (AUDIO) jacks.
Note that if you select one of the TVS settings, the player does not output Dolby Digital signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack. (when you set "DOLBY DIGITAL" in "AUDIO SETUP" to "D-PCM") (page 62)



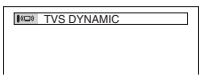
1 Press DISPLAY twice during playback.

The following Control Bar appears.

• "TVS NIGHT" only works with Dolby Digital discs. However, not all discs will respond to the "TVS NIGHT" function in the same way.
• If you use the DIGITAL OUT (OPTICAL or COAXIAL) jack and set "DOLBY DIGITAL" to "DOLBY DIGITAL" or "DTS" to "ON" in "AUDIO SETUP," sound will come from your speakers but it will not have the TVS effect.

2 Press ←/→ to select (SURROUND), then press ENTER repeatedly to select one of the TVS sounds.

Refer to the following explanations given for each item.
• TVS DYNAMIC
• TVS WIDE
• TVS NIGHT
• TVS STANDARD

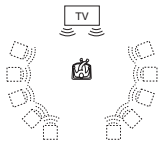


To cancel the setting
Select "OFF" in Step 2.

To turn off the Control Bar
Press DISPLAY repeatedly until the Control Bar is turned off.

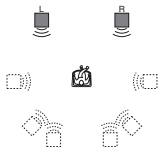
◆TVS DYNAMIC
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers (shown below).
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

◆TVS WIDE
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below.
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆TVS NIGHT
Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD
Creates virtual rear speakers from the sound of the front speakers (L, R) without using actual rear speakers. The virtual speakers are reproduced as shown in the illustration below. Use this setting when you want to use TVS with 2 separate speakers.



L: Front speaker (left)
R: Front speaker (right)
□: Virtual speaker

Hint
You can also change the setting by pressing SUR (or SURROUND on the player) repeatedly.

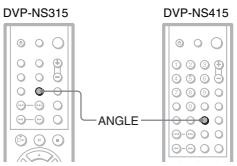
Notes
• When the playing signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
• When you select one of the TVS modes, turn off the surround setting of the connected TV or amplifier (receiver).
• Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.

→continued

Enjoying Movies

Changing the Angles DVD

If various angles (multi-angles) for a scene are recorded on the DVD, "" appears in the front panel display. This means that you can change the viewing angle.



1 Press ANGLE during playback.

The number of the angle appears on the display.
The number in parentheses indicates the total number of angles.

2 Press ANGLE repeatedly to select the angle number.

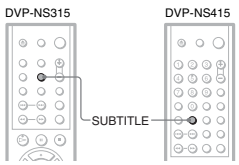
The scene changes to the selected angle.

Note

Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

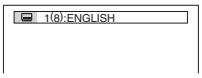
Displaying the Subtitles DVD

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.



1 Press SUBTITLE during playback.

The following display appears.
The number in parentheses indicates the total number of available subtitles.



2 Press SUBTITLE repeatedly to select the language.

Depending on the DVD, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 68 to see which language the code represents.

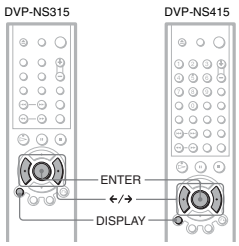
To turn off the subtitles
Select "OFF" in Step 2.

Note

Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Adjusting the Picture Quality (BNR) DVD VCD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.



1 Press DISPLAY twice during playback.

The following Control Bar appears.

2 Press ←/→ to select (BNR), then press ENTER repeatedly to select a level.

- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

To cancel the "BNR" setting

Select "OFF" in Step 2.

To turn off the Control Bar

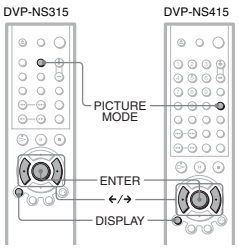
Press DISPLAY repeatedly until the Control Bar is turned off.

Notes

- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, the "BNR" effect may be hard to discern.

Adjusting the Playback Picture (CUSTOM PICTURE MODE) DVD VCD

You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the program you are watching.

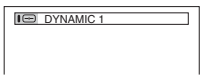


1 Press DISPLAY twice during playback.

The following Control Bar appears.

2 Press ←/→ to select (CUSTOM PICTURE MODE), then press ENTER repeatedly to select the setting you want.

The default setting is underlined.



- STANDARD: displays a standard picture.
- DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the color intensity.
- DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the color intensity.
- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colors become brighter and black colors become richer, and the color contrast is increased.

To turn off the Control Bar

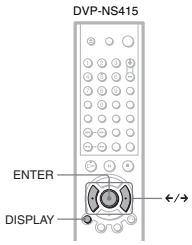
Press DISPLAY repeatedly until the Control Bar is turned off.

Hints

- When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.
- You can also select the "CUSTOM PICTURE MODE" setting by pressing PICTURE MODE repeatedly.

Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) (DVP-NS415 only) DVD VCD

The Digital Video Enhancer (DVE) function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.



1 Press DISPLAY twice during playback.

The following Control Bar appears.

2 Press ←/→ to select (DIGITAL VIDEO ENHANCER), then press ENTER repeatedly to select a level.

- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD only).

To cancel the "DIGITAL VIDEO ENHANCER" setting

Select "OFF" in Step 2.

To turn off the Control Bar

Press DISPLAY repeatedly until the Control Bar is turned off.

Note

Depending on the disc or the scene being played, noise found in the disc may become more apparent. If this happens, it is recommended that you use the BNR function (page 48) with the DVE function. If the condition still does not improve, reduce the Digital Video Enhancer level, or select "SOFT" (DVD only) in Step 2 above.

Using Various Additional Functions

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

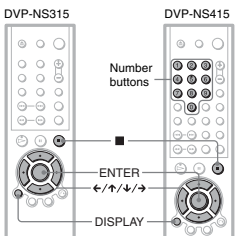
You can set two kinds of playback restrictions for the desired disc.

- Custom Parental Control
  You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control
  Playback of some DVDs can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes.

The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control DVD VCD CD

You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st-disc, the first disc is canceled.

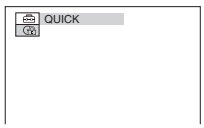


1 Insert the disc you want to lock.

If the disc is playing, press ■ to stop playback.

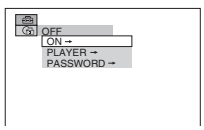
2 Press DISPLAY while the player is in stop mode.

The following Control Bar appears.



3 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.

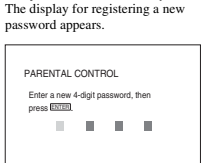
The options for "PARENTAL CONTROL" appear.



4 Press ↑/↓ to select "ON →," then press ENTER.

◆ If you have not entered a password

The display for registering a new password appears.



Enter a 4-digit password by pressing ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).
The display for confirming the password appears.

◆ When you have already registered a password

The display for entering the password appears.

➡continued

5 Enter or re-enter your 4-digit password by pressing ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER.

You can also use the number buttons to enter your password (DVP-NS415 only). "Custom parental control is set." appears when you enter your password.

To turn off the Custom Parental Control function

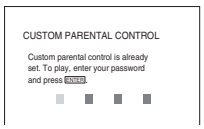
1 Follow Steps 1 through 3 of "Custom Parental Control."

2 Press ↑/↓ to select "OFF →," then press ENTER.

3 Enter your 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).

To play a disc for which Custom Parental Control is set

1 Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.



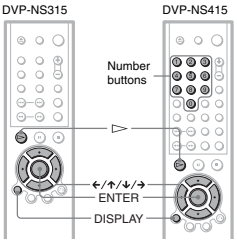
2 Enter your 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).
The player is ready for playback.

Hint

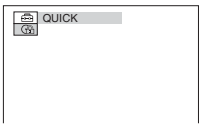
If you forget your password, enter the 6-digit number "199703" using ↑/↓ to select the digit, followed by ←/→ to move the cursor when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. (Press → after the 4th digit to allow the entire 6-digit number to be entered.) The display will ask you to enter a new 4-digit password. You can also use the number buttons to enter the digits (DVP-NS415 only).

Parental Control (limiting playback by children) DVD

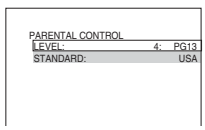
Playback of some DVDs can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



1 Press DISPLAY while the player is in stop mode.
The following Control Bar appears.



2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



The lower the value, the stricter the limitation.

To turn off the Parental Control function

Set "LEVEL" to "OFF" in Step 8.

To play a disc for which Parental Control is set

1 Insert the disc and press ⊳.
The display for entering your password appears.

2 Enter your 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).
The player starts playback.

Hint

If you forget your password, remove the disc and repeat Steps 1 to 3 of "Parental Control (limiting playback by children)." When you are asked to enter your password, enter "199703" using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. (Press → after the 4th digit to allow the entire 6-digit number to be entered.) The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password in Step 4, replace the disc in the player and press ⊳. When the display for entering your password appears, enter your new password. You can also use the number buttons to enter the digits (DVP-NS415 only).

Note

When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.

Area Code

Standard	Code number	Standard	Code number
Argentina	2044	Korea	2304
Australia	2047	Malaysia	2363
Austria	2046	Mexico	2362
Belgium	2057	Netherlands	2376
Brazil	2070	New Zealand	2390
Canada	2079	Norway	2379
Chile	2090	Pakistan	2427
China	2092	Philippines	2424
Denmark	2115	Portugal	2436
Finland	2165	Russia	2489
France	2174	Singapore	2501
Germany	2109	Spain	2149
India	2248	Sweden	2499
Indonesia	2238	Switzerland	2086
Italy	2254	Thailand	2528
Japan	2276	United Kingdom	2184

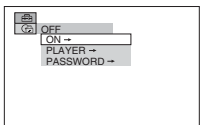
Changing the password

1 Press DISPLAY while the player is in stop mode.
The Control Bar appears.

2 Press ↑/↓ to select (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.

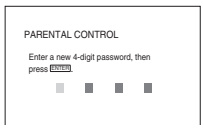
3 Press ↑/↓ to select "PASSWORD →," then press ENTER.
The display for entering the password appears.

4 Enter your 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER.
You can also use the number buttons to enter your password (DVP-NS415 only).



3 Press ↑/↓ to select "PLAYER →," then press ENTER.

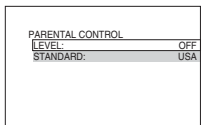
◆ If you have not entered a password
The display for registering a new password appears.



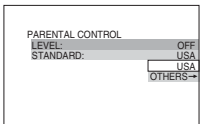
Enter a 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER. You can also use the number buttons to enter your password (DVP-NS415 only).
The display for confirming the password appears.

◆ When you have already registered a password
The display for entering the password appears.

4 Enter or re-enter your 4-digit password by pressing ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER.
You can also use the number buttons to enter your password (DVP-NS415 only).
The display for setting the playback limitation level appears.

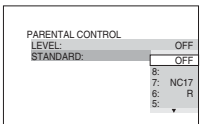


5 Press ↑/↓ to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.



6 Press ↑/↓ to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.
When you select "OTHERS →," select and enter a standard code in the table on page 54. You can also use the number buttons to enter your password (DVP-NS415 only).

7 Press ↑/↓ to select "LEVEL," then press ENTER.
The selection items for "LEVEL" are displayed.



8 Select the level you want using ↑/↓, then press ENTER.
Parental Control setting is complete.

→continued

5 Enter a new 4-digit password using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER.
You can also use the number buttons to enter your password (DVP-NS415 only).

6 To confirm your password, re-enter it using ↑/↓ to select the digit, followed by ←/→ to move the cursor, then press ENTER.
You can also use the number buttons to enter your password (DVP-NS415 only).

If you make a mistake entering your password

Press ← before you press ENTER and input the correct number.

If you make a mistake

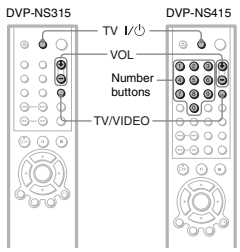
Press ↩ RETURN.

To turn off the display

Press DISPLAY repeatedly until the display is turned off.

Controlling Your TV with the Supplied Remote

You can control the sound level, input source, and power switch of your Sony TV with the supplied remote.



You can control your TV using the buttons below.

By pressing	You can
TV I/⏻	Turn the TV on or off
VOL +/–	Adjust the volume of the TV
TV/VIDEO	Switch the TV's input source between the TV and other input sources

Note

Depending on the unit being connected, you may not be able to control your TV using some of the buttons.

→continued

Controlling other TVs with the remote (DVP-NS415 only)

You can control the sound level, input source, and power switch of non-Sony TVs as well. If your TV is listed in the table below, set the appropriate manufacturer's code.

1 While holding down TV I/⏻, press the number buttons to select your TV's manufacturer's code (see the table below).

2 Release TV I/⏻.

Code numbers of controllable TVs

Manufacturer	Code number
Sony (default)	01
JVC	09
Panasonic	19
Philips	21
RCA	10
Samsung	20
Sanyo	11
Sharp	18
Toshiba	07
Zenith	15

Notes

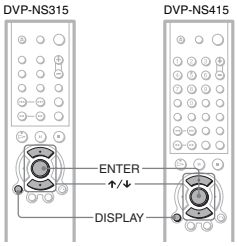
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 58 to 62.

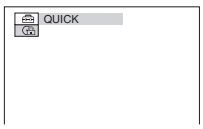
Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.



1 Press DISPLAY when the player is in stop mode.

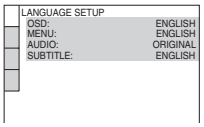
The Control Bar appears.



2 Press ↑/↓ to select (SETUP), then press ENTER.

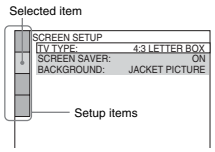
3 Press ↑/↓ to select "CUSTOM," then press ENTER.

The Setup Display appears.



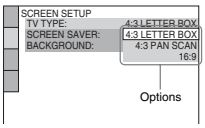
4 Press ↑/↓ to select the setup item from the displayed list: "LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," or "AUDIO SETUP." Then press ENTER.

The Setup item is selected.
Example: "SCREEN SETUP"



5 Select an item using ↑/↓, then press ENTER.

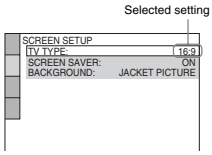
The options for the selected item appear.
Example: "TV TYPE"



➡continued

6 Select a setting using ↑/↓, then press ENTER.

The setting is selected and setup is complete.
Example: "16:9"



To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To enter the Quick Setup mode

Select "QUICK" in Step 3. Follow from Step 5 of the Quick Setup explanation to make basic adjustments (page 25).

To reset all of the "SETUP" settings

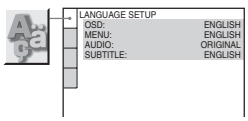
If you select "RESET" in Step 3, you can reset all of the "SETUP" settings on pages 58 to 62 to the default settings. After you select "RESET" and press ENTER, select "YES" and press ENTER to reset the settings (it takes a few seconds to complete), or select "NO" and press ENTER to return to the Control Bar. Do not press I/⏻ when resetting the player.

Setting the Display or Sound Track Language

(LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57).



◆ OSD (On-Screen Display)

Switches the display language on the screen.

◆ MENU (DVD only)

You can select the desired language for the disc's menu.

◆ AUDIO (DVD only)

Switches the language of the sound track. When you select "ORIGINAL," the language given priority in the disc is selected.

◆ SUBTITLE (DVD only)

Switches the language of the subtitle recorded on the DVD.
When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint

If you select "OTHERS →" in "MENU," "SUBTITLE," and "AUDIO," select and enter a language code from "Language Code List" on page 68 using ↑/↓ to select the digit, followed by ←/→ to move the cursor. You can also use the number buttons to enter the digits (DVP-NS415 only).

Note

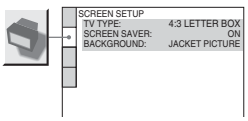
When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on the DVD, one of the recorded languages will be automatically selected.

Settings for the Display

(SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 57).
The default settings are underlined.



◆ TV TYPE

Selects the aspect ratio of the connected TV (4:3 standard or wide).

4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays the wide picture on the entire screen and cuts off the portions that do not fit.
16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.

4:3 LETTER BOX

4:3 PAN SCAN

16:9

Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

◆ SCREEN SAVER

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a CD or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press ▷ to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND

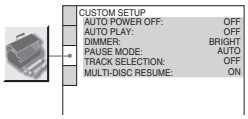
Selects the background color or picture on the TV screen in stop mode or while playing a CD or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background color is blue.
BLACK	The background color is black.

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select “CUSTOM SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 57).
The default settings are underlined.



◆ AUTO POWER OFF

Switches the Auto Power Off setting on or off.

OFF	Switches this function off.
ON	The player enters standby mode when left in stop mode for more than 30 minutes.

◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.
OFF	Turns off the lighting.

◆ PAUSE MODE (DVD only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

◆ TRACK SELECTION (DVD only)

Gives the sound track which contains the highest number of channels priority when you play a DVD on which multiple audio formats (PCM, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

- When you set the item to “AUTO,” the language may change. The “TRACK SELECTION” setting has higher priority than the “AUDIO” settings in “LANGUAGE SETUP” (page 58).
- If you set “DTS” to “OFF” (page 62), the DTS sound track is not played even if you set “TRACK SELECTION” to “AUTO.”
- If PCM, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, DTS, and Dolby Digital sound tracks in this order.

◆ MULTI-DISC RESUME (DVP-NS415 only) (DVD/VIDEO CD only)

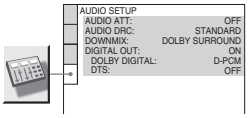
Switches the Multi-disc Resume setting on or off. Resume playback can be stored in memory for up to 6 different DVD/VIDEO CD discs (page 31).

ON	Stores the resume settings in memory for up to six discs (The settings remain in memory even if you select OFF.)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

Settings for the Sound (AUDIO SETUP)

“AUDIO SETUP” allows you to set the sound according to the playback and connection conditions.

Select “AUDIO SETUP” in the Setup Display. To use the display, see “Using the Setup Display” (page 57).
The default settings are underlined.



◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to “ON.” The player reduces the audio output level.
This function affects the output of the LINE OUT L/R (AUDIO) jacks.

OFF	Normally, select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to “AUDIO DRC.” This affects the output from the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack only when “DOLBY DIGITAL” is set to “D-PCM” (page 62).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.
WIDE RANGE	Gives you the feeling of being at a live performance.

◆ DOWNMIX (DVD only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see “Checking the audio signal format” (page 43). This function affects the output of the following jacks:
– LINE OUT L/R (AUDIO) jacks
– DIGITAL OUT (OPTICAL or COAXIAL) jack when “DOLBY DIGITAL” is set to “D-PCM” (page 62).

DOLBY SURROUND	Select this when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic).
NORMAL	Select this when the player is connected to an audio component that does not conform to Dolby Surround (Pro Logic).

◆ DIGITAL OUT

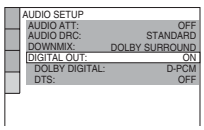
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally select this position. When you select “ON,” see “Setting the digital output signal” for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

➞continued

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.
For connection details, see page 20.
Select “DOLBY DIGITAL” and “DTS” after setting “DIGITAL OUT” to “ON.”



If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, affecting your ears or causing the speakers to be damaged.

◆ DOLBY DIGITAL (DVD only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the “DOWNMIX” item in “AUDIO SETUP” (page 61).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ DTS (DVD only)

Selects whether or not to output DTS signals.

OFF	Select this when the player is connected to an audio component lacking a built-in DTS decoder.
ON	Select this when the player is connected to an audio component with a built-in DTS decoder.

Note

If you select one of the TVS settings while playing a DVD, the player does not output Dolby Digital signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack (when you set “DOLBY DIGITAL” in “AUDIO SETUP” to “D-PCM”) (page 62).

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.

➞ Check that the AC power cord is connected securely.

Picture

There is no picture/picture noise appears.

➞ Re-connect the connecting cord securely.
➞ The connecting cords are damaged.
➞ Check the connection to your TV (page 18) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
➞ The disc is dirty or flawed.
➞ If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV’s S VIDEO input (page 18).

Even though you set the aspect ratio in “TV TYPE” of “SCREEN SETUP,” the picture does not fill the screen.

➞ The aspect ratio of the disc is fixed on your DVD.

There is no picture from your VCR connected to the LINE IN jacks.

➞ The DVD player must be in standby mode to view pictures from your VCR.

Sound

There is no sound.

➞ Re-connect the connecting cord securely.
➞ The connecting cord is damaged.
➞ The player is connected to the wrong input jack on the amplifier (receiver) (page 22, 23, 24).
➞ The amplifier (receiver) input is not correctly set.
➞ The player is in pause mode or in Slow-motion Play mode.
➞ The player is in fast forward or fast reverse mode.
➞ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 61).

Sound is noisy.

➞ When playing a CD with DTS sound tracks, noise will come from the LINE OUT L/R (AUDIO) jacks (page 27) or DIGITAL OUT (OPTICAL or COAXIAL) jack.

Sound distortion occurs.

➞ Set “AUDIO ATT” in “AUDIO SETUP” to “ON” (page 61).

The sound volume is low.

➞ The sound volume is low on some DVDs. The sound volume may improve if you set “AUDIO DRC” to “TV MODE” (page 61).
➞ Set “AUDIO ATT” in “AUDIO SETUP” to “OFF” (page 61).

Operation

The remote does not function.

➞ There are obstacles between the remote and the player.
➞ The distance between the remote and the player is too far.
➞ The remote is not pointed at the remote sensor on the player.
➞ The batteries in the remote are weak.

The disc does not play.

➞ The disc is turned over.
Insert the disc with the playback side facing down on the disc tray.
➞ The disc is skewed.
➞ The player cannot play certain discs (page 6).
➞ The region code on the DVD does not match

➞continued

the player.
➡ Moisture has condensed inside the player (page 3).
➡ The player cannot play CD-Rs, CD-RWs, DVD-Rs, or DVD-RWs (video mode) that are not finalized (page 6).

The MP3 audio track cannot be played (page 34).
➡ The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/ Level 2 or Joliet.
➡ The MP3 audio track does not have the extension ".MP3."
➡ The data is not formatted in MP3 even though it has the extension ".MP3."
➡ The data is not MPEG1 Audio Layer 3 data.
➡ The player cannot play audio tracks in MP3PRO format.

The title of the MP3 audio album or track is not correctly displayed.
➡ The player can only display numbers and alphabet. Other characters are displayed as asterisks.

The disc does not start playing from the beginning.
➡ Program Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 35).
➡ Resume play has taken effect (page 31).

The player starts playing the disc automatically.
➡ The disc features an auto playback function.
➡ "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 60).

Playback stops automatically.
➡ While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Program Play.
➡ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.
➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multilingual tracks are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.
➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multilingual subtitles are not recorded on the DVD being played.
➡ The DVD prohibits the changing of the subtitles.

The angles cannot be changed.
➡ Try using the DVD's menu instead of the direct selection button on the remote (page 32).
➡ Multi-angles are not recorded on the DVD being played.
➡ The angle can only be changed when the "" indicator lights up on the front panel display (page 9).
➡ The DVD prohibits changing of the angles.

The player does not operate properly.
➡ When static electricity, etc., causes the player to operate abnormally, unplug the player.

Nothing is displayed on the front panel display.
➡ "DIMMER" in "CUSTOM SETUP" is set to "OFF." Set "DIMMER" to "BRIGHT" or "DARK" (page 60).

5 numbers or letters are displayed on the screen and on the front panel display.
➡ The self-diagnosis function was activated. (See the table on page 65.)

The disc tray does not open and "LOCKED" appears on the front panel display.
➡ Child Lock is set (page 28).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.
➡ Contact your Sony dealer or local authorized Sony service facility.

"Data error" appears on the TV screen when playing a DATA CD.
➡ The MP3 audio track you want to play is broken.
➡ The data is not MPEG 1 Audio Layer 3 data.

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.

First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. ➡ Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 9)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 24, 62)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in Dolby Digital cinema audio systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 23)
Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, center and rear signals. The rear channel is monaural.

DTS (page 24, 62)
Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD (page 6)
A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.
The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17GB.
The picture data uses the MPEG 2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

Index (CD)/Video Index (VIDEO CD) (page 9)
A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

Scene (page 9)
On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

Title (page 9)
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)
Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

Language Code List

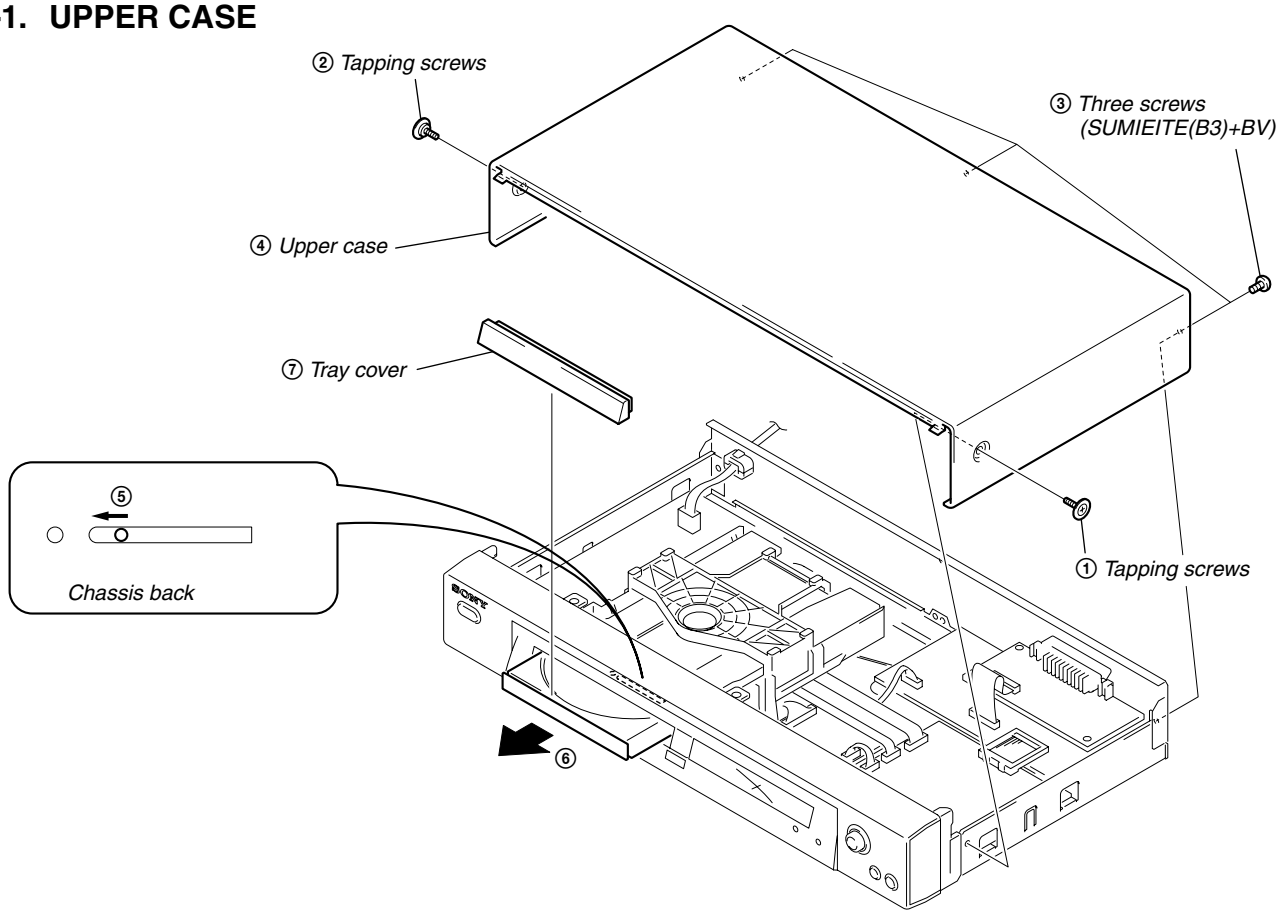
For details, see pages 43, 47, 58.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
		1253	Icelandic	1403	(Afan)Oromo	1529	Tigrinya
1067	Tibetan	1254	Italian	1408	Oriya	1531	Turkmen
1070	Breton	1257	Hebrew	1417	Punjabi	1532	Tagalog
1079	Catalan	1261	Japanese	1428	Polish	1534	Setswana
1093	Corsican	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1097	Czech	1283	Javanese			1538	Turkish
1103	Welsh	1287	Georgian	1436	Portuguese	1539	Tsonga
1105	Danish	1297	Kazakh	1463	Quechua	1540	Tatar
1109	German	1298	Greenlandic	1481	Rhaeto-Romance	1543	Twi
1130	Bhutani	1299	Cambodian			1557	Ukrainian
1142	Greek	1300	Kannada	1482	Kirundi	1564	Urdu
1144	English	1301	Korean	1483	Romanian	1572	Uzbek
1145	Esperanto	1305	Kashmiri	1489	Russian	1581	Vietnamese
1149	Spanish	1307	Kurdish	1491	Kinyarwanda	1587	Volapük
1150	Estonian	1311	Kirghiz	1495	Sanskrit	1613	Wolof
1151	Basque	1313	Latin	1498	Sindhi	1632	Xhosa
1157	Persian	1326	Lingala	1501	Sangho	1665	Yoruba
1165	Finnish	1327	Laothian	1502	Serbo-Croatian	1684	Chinese
1166	Fiji	1332	Lithuanian			1697	Zulu
1171	Faroese	1334	Latvian; Lettish	1503	Singhalese		
1174	French			1505	Slovak		
1181	Frisian	1345	Malagasy	1506	Slovenian	1703	Not specified

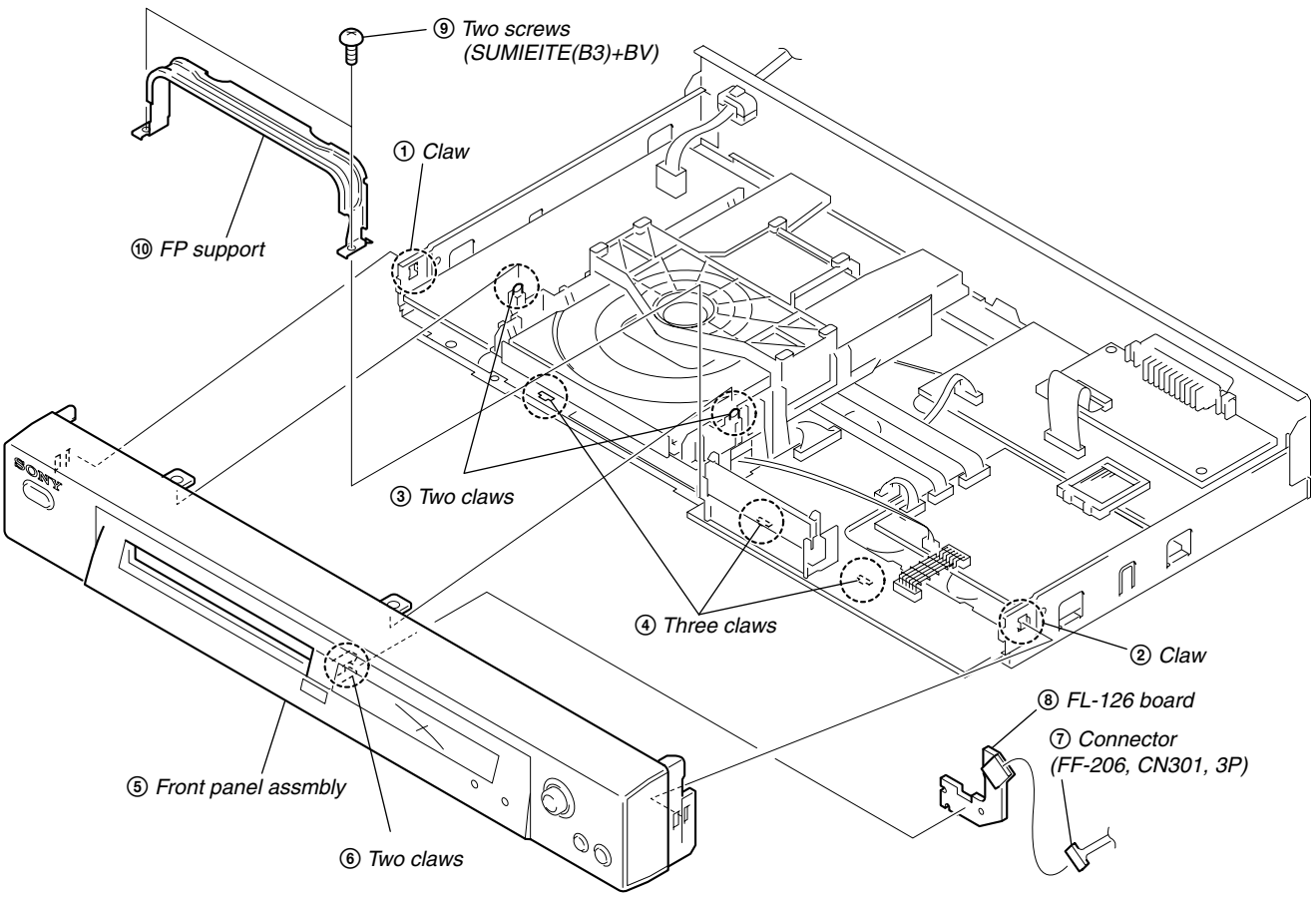
SECTION 2
DISASSEMBLY

NOTE: Follow the disassembly procedure in the numerical order given.

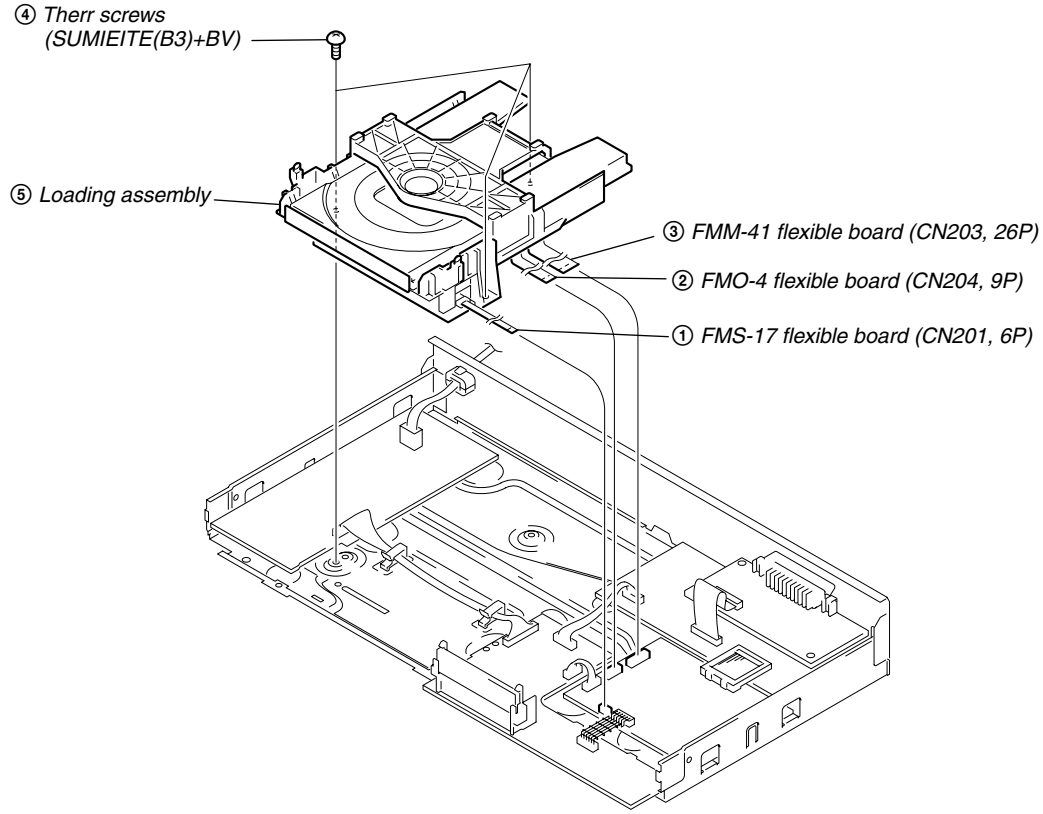
2-1. UPPER CASE



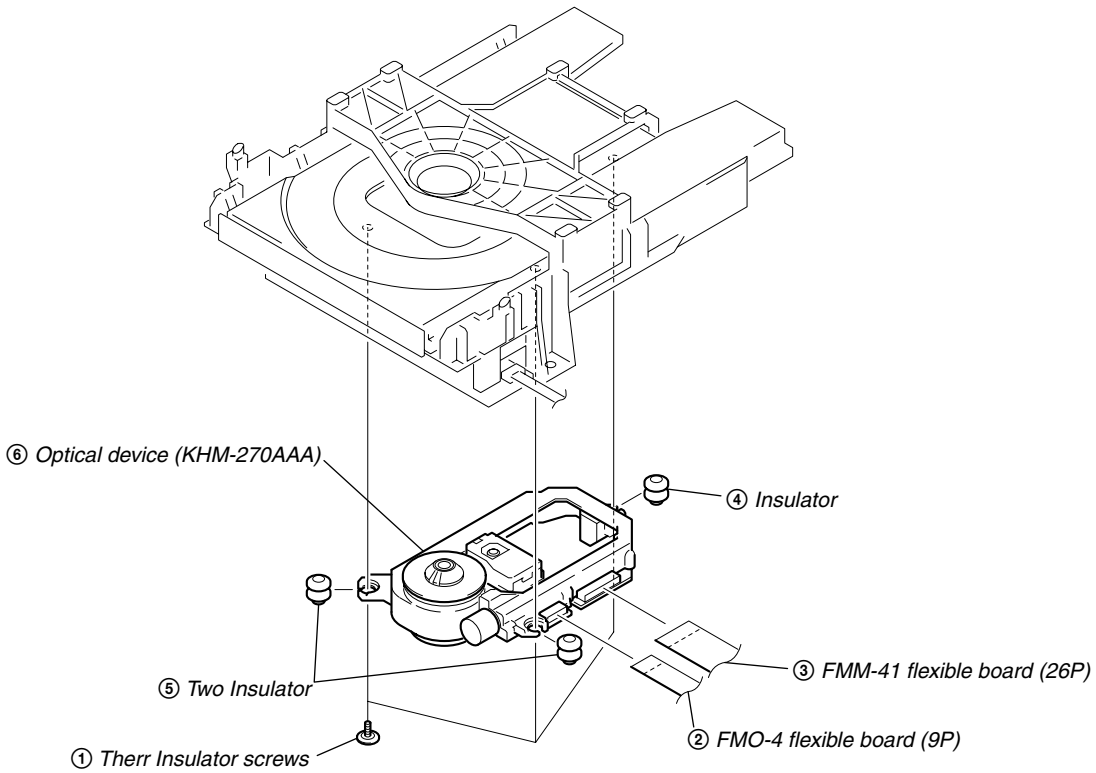
2-2. FRONT PANEL ASSEMBLY and FR SUPPORT



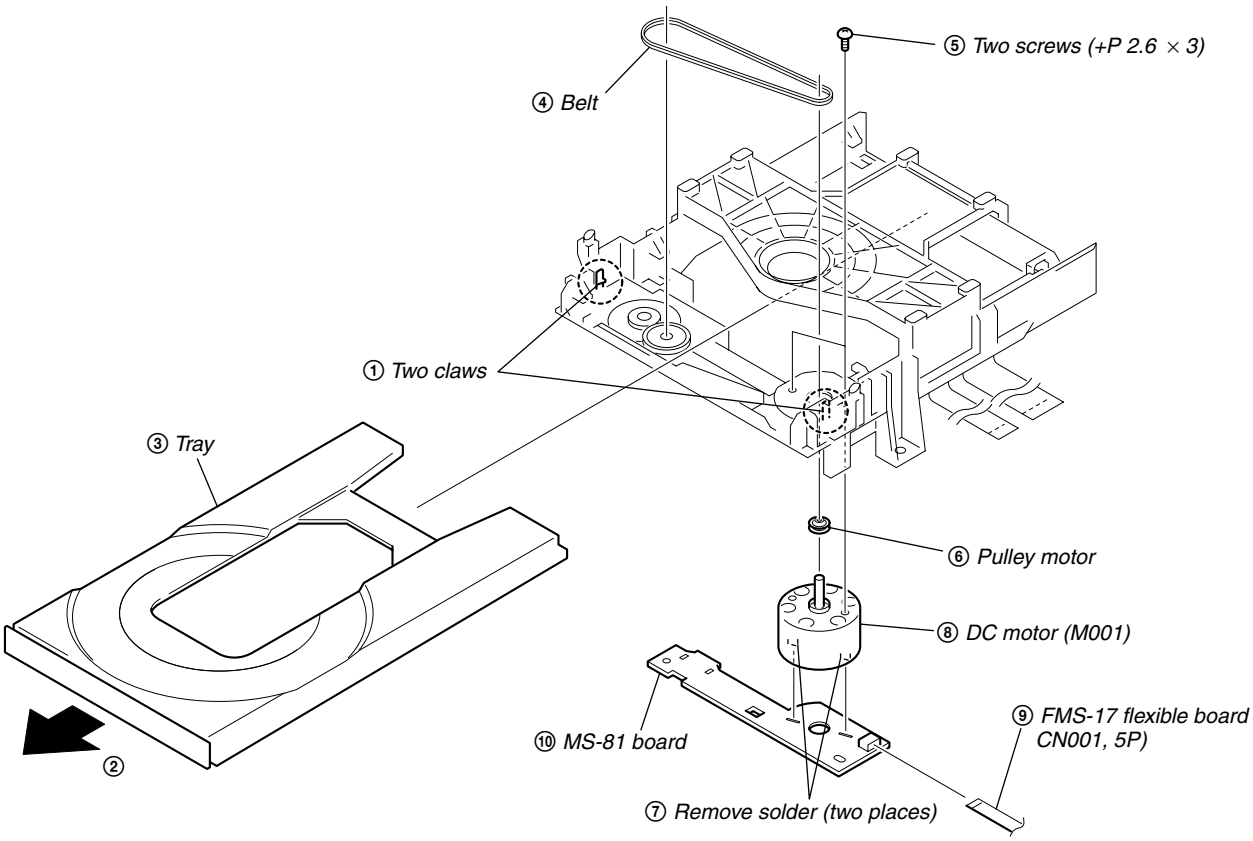
2-3. LOADING ASSEMBLY


④ Therr screws
(SUMIEITE(B3)+BV)
⑤ Loading assembly
③ FMM-41 flexible board (CN203, 26P)
② FMO-4 flexible board (CN204, 9P)
① FMS-17 flexible board (CN201, 6P)

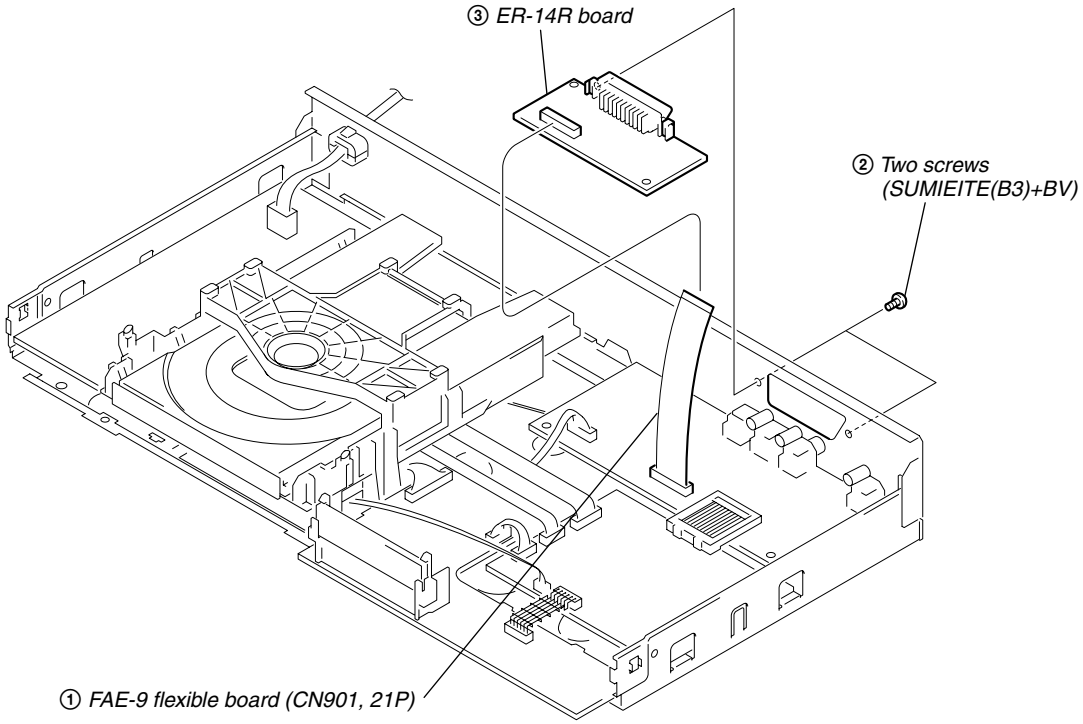
2-4. OPTICAL DEVICE (KHM-270AAA)



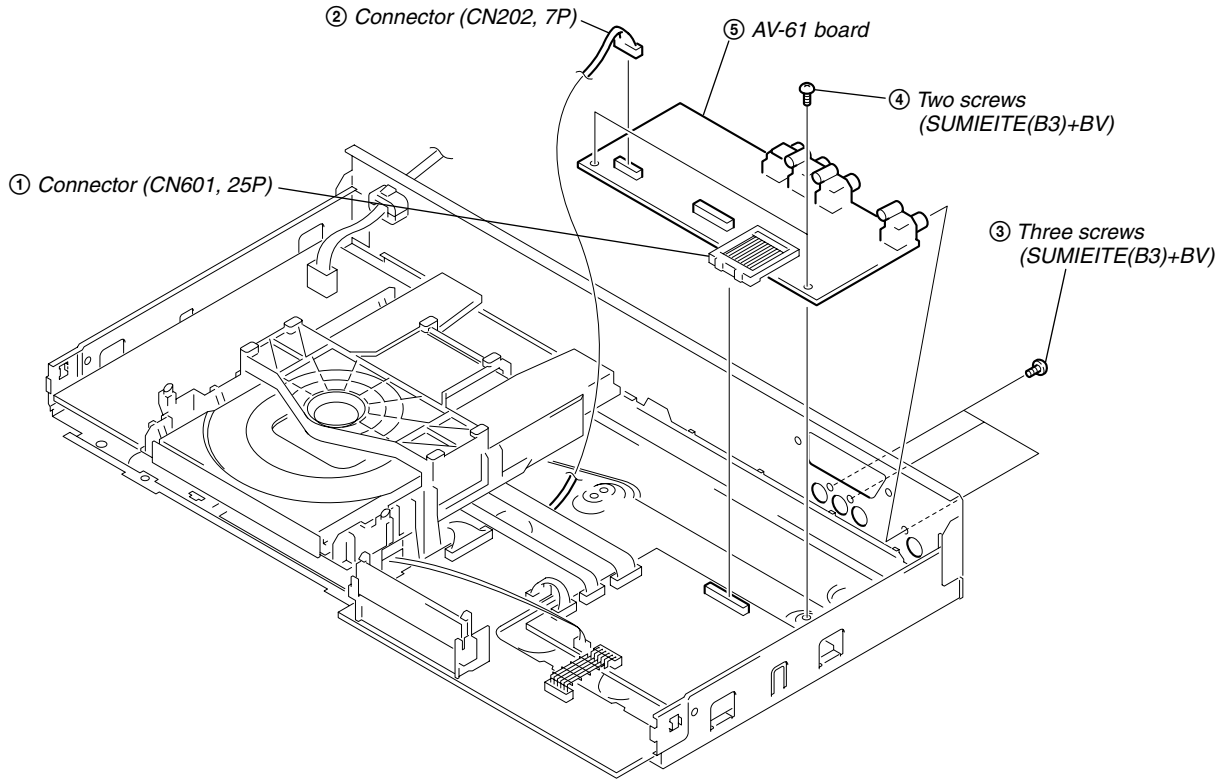
2-5. DC MOTOR and MS-81 BOARD



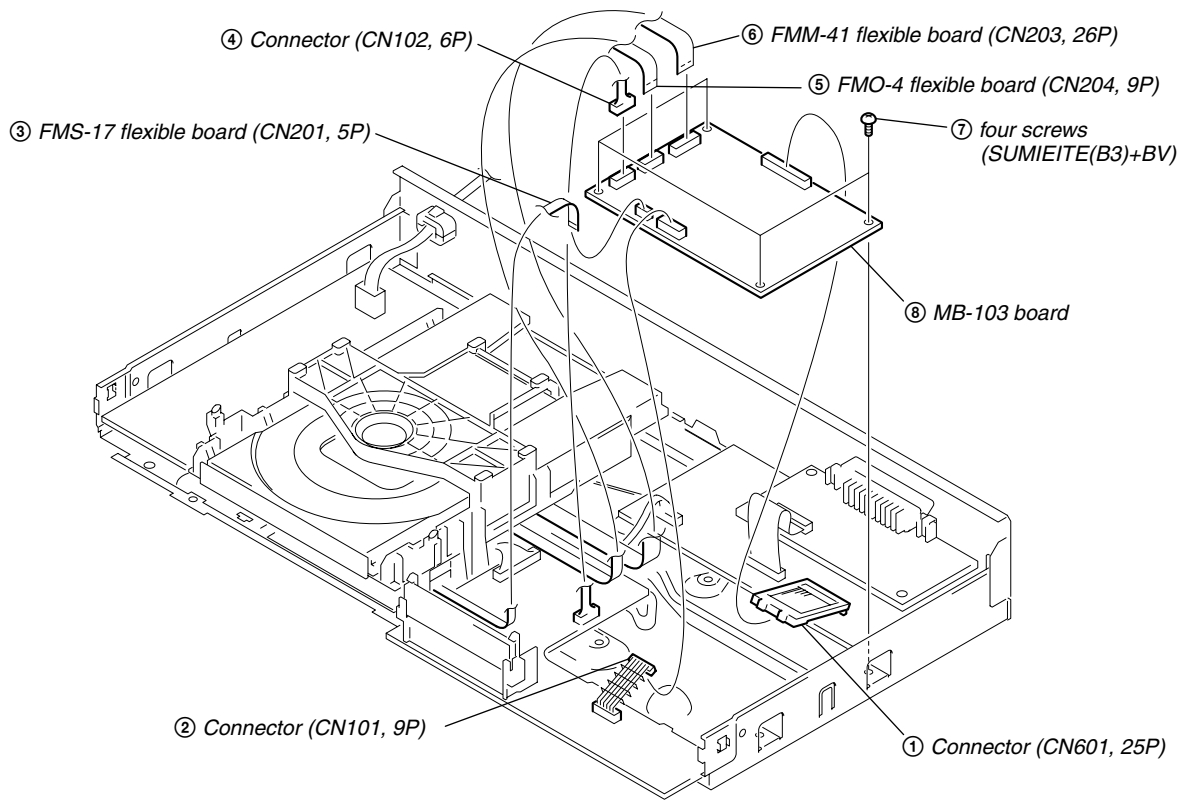
2-6. ER-14R BOARD



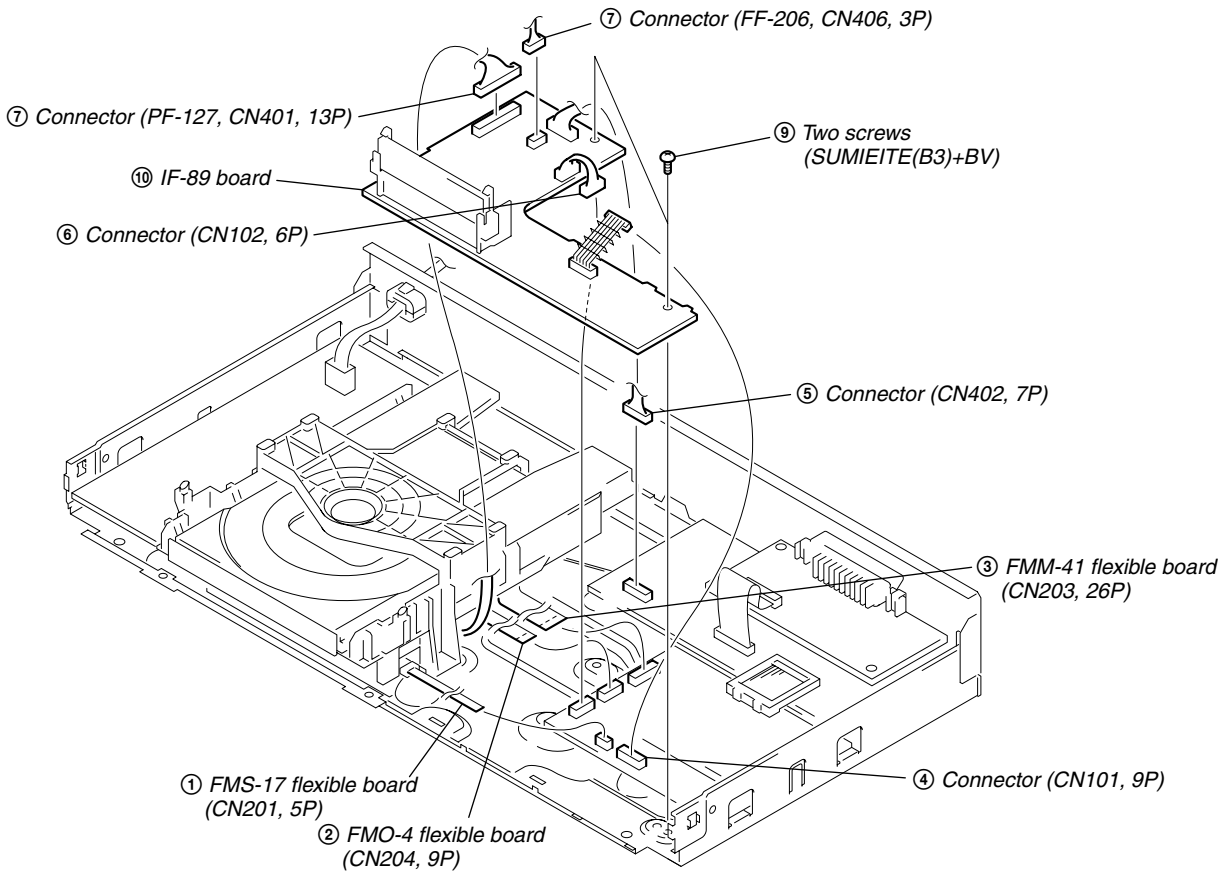
2-7. AV-61 BOARD



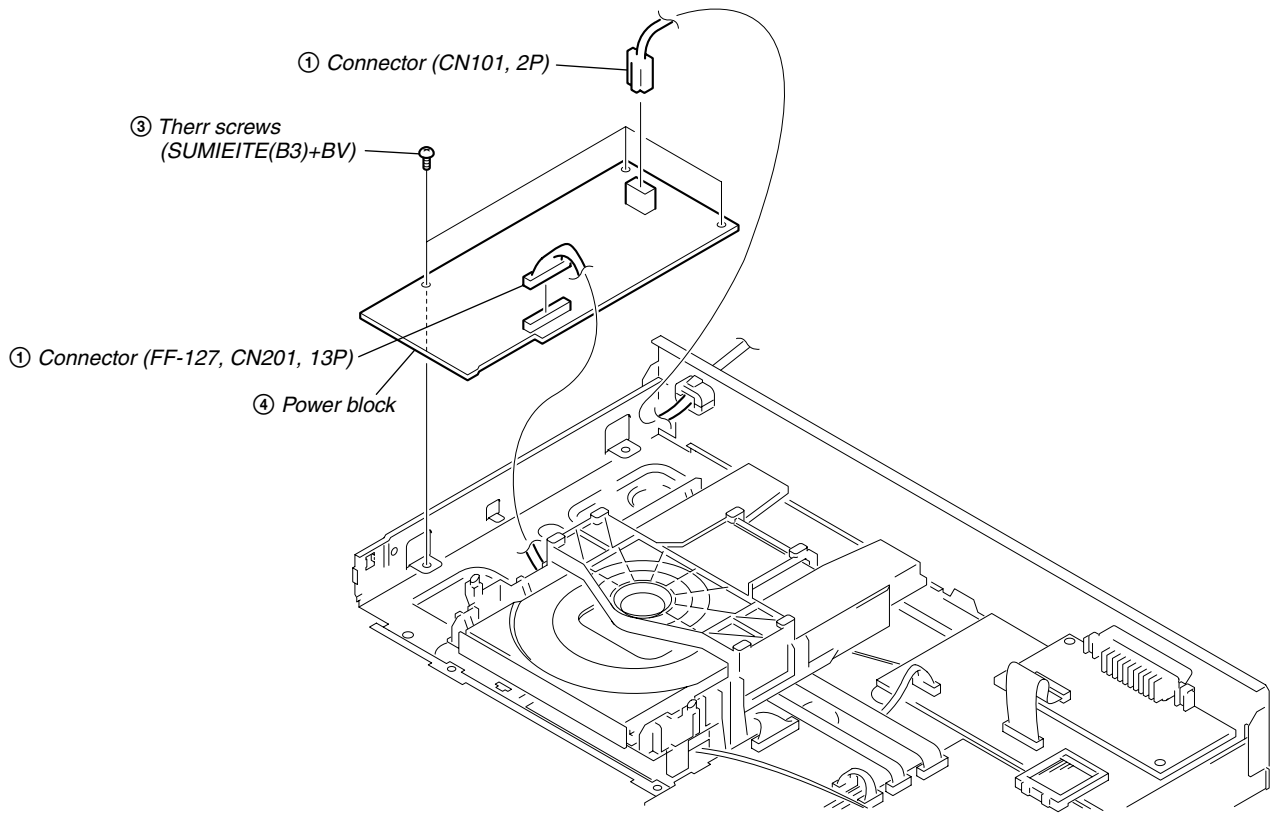
2-8. MB-103 BOARD


④ Connector (CN102, 6P)
⑥ FMM-41 flexible board (CN203, 26P)
⑤ FMO-4 flexible board (CN204, 9P)
③ FMS-17 flexible board (CN201, 5P)
⑦ four screws
(SUMIEITE(B3)+BV)
⑧ MB-103 board
② Connector (CN101, 9P)
① Connector (CN601, 25P)

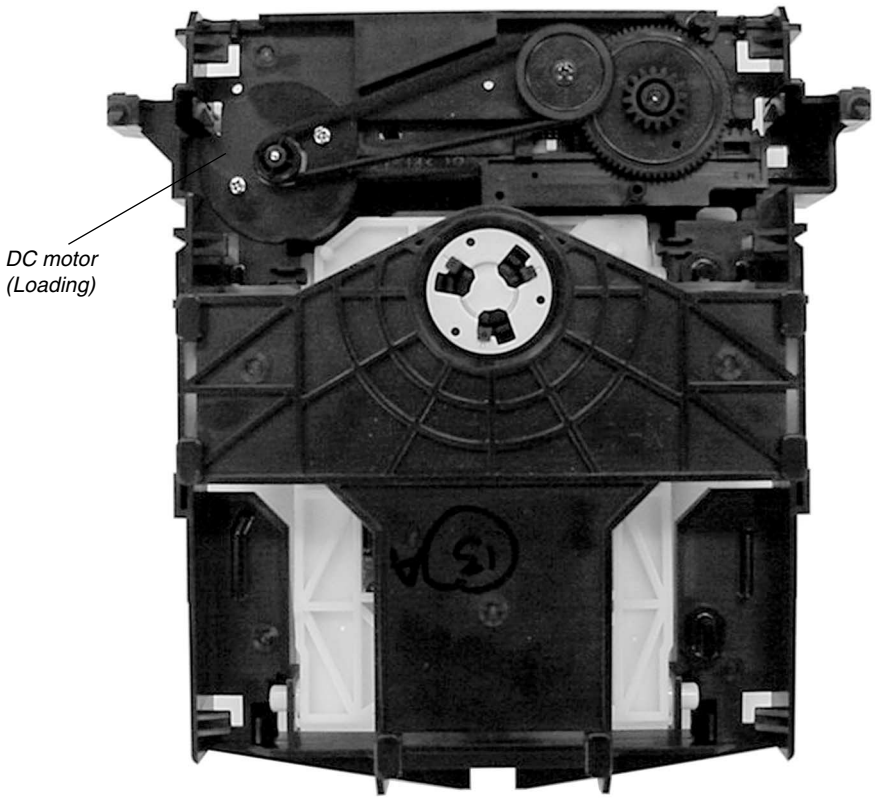
2-9. IF-89 BOARD

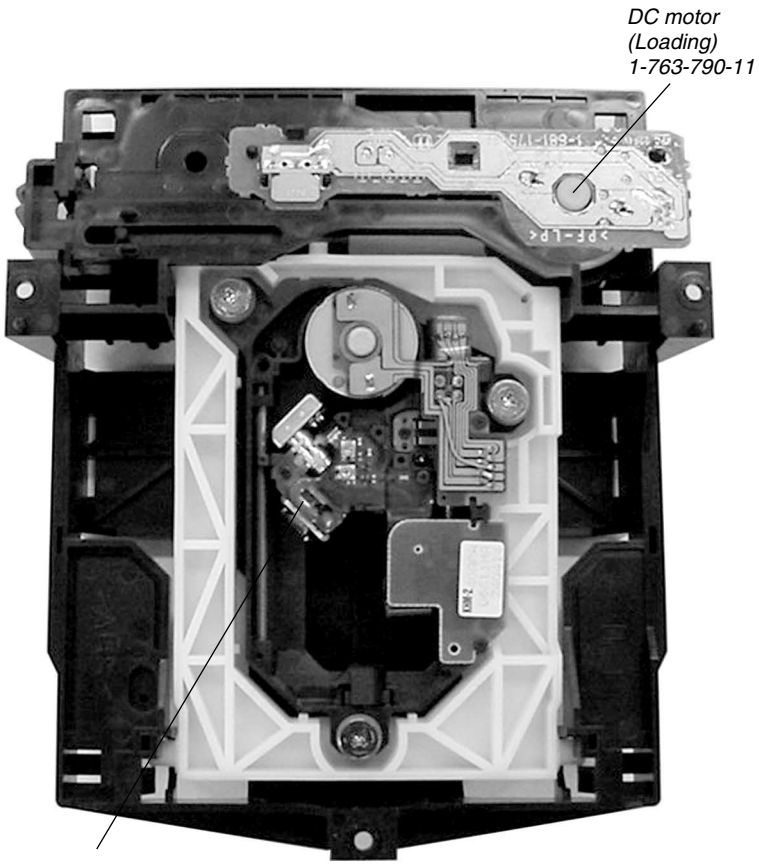


2-10. SWITCHING REGULATOR

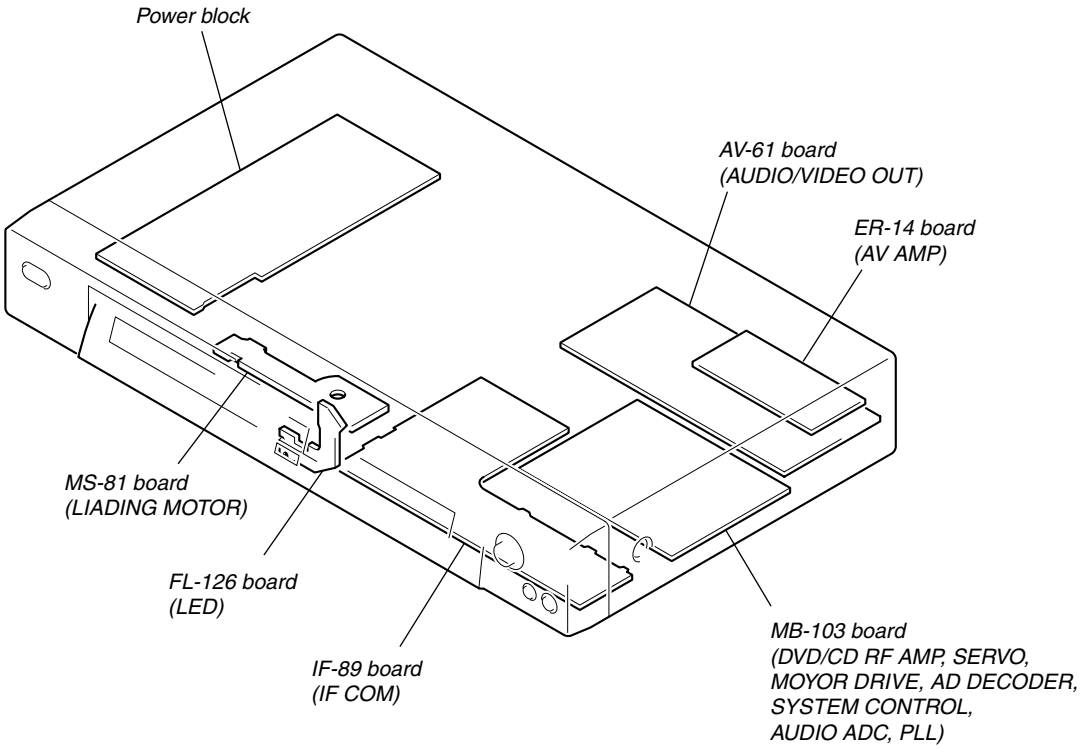


2-11. INTERNAL VIEWS





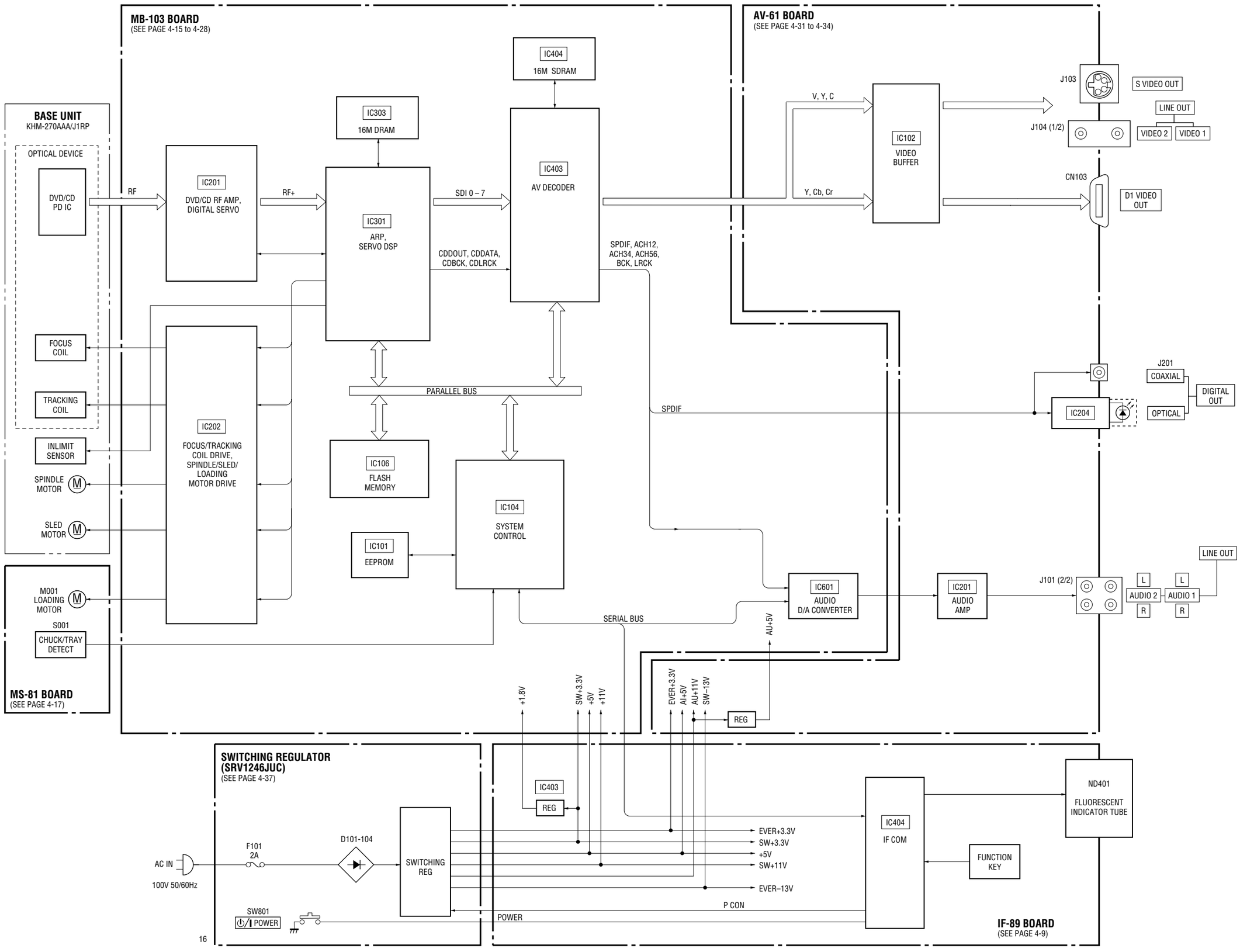
2-12. CIRCUIT BOARDS LOCATION



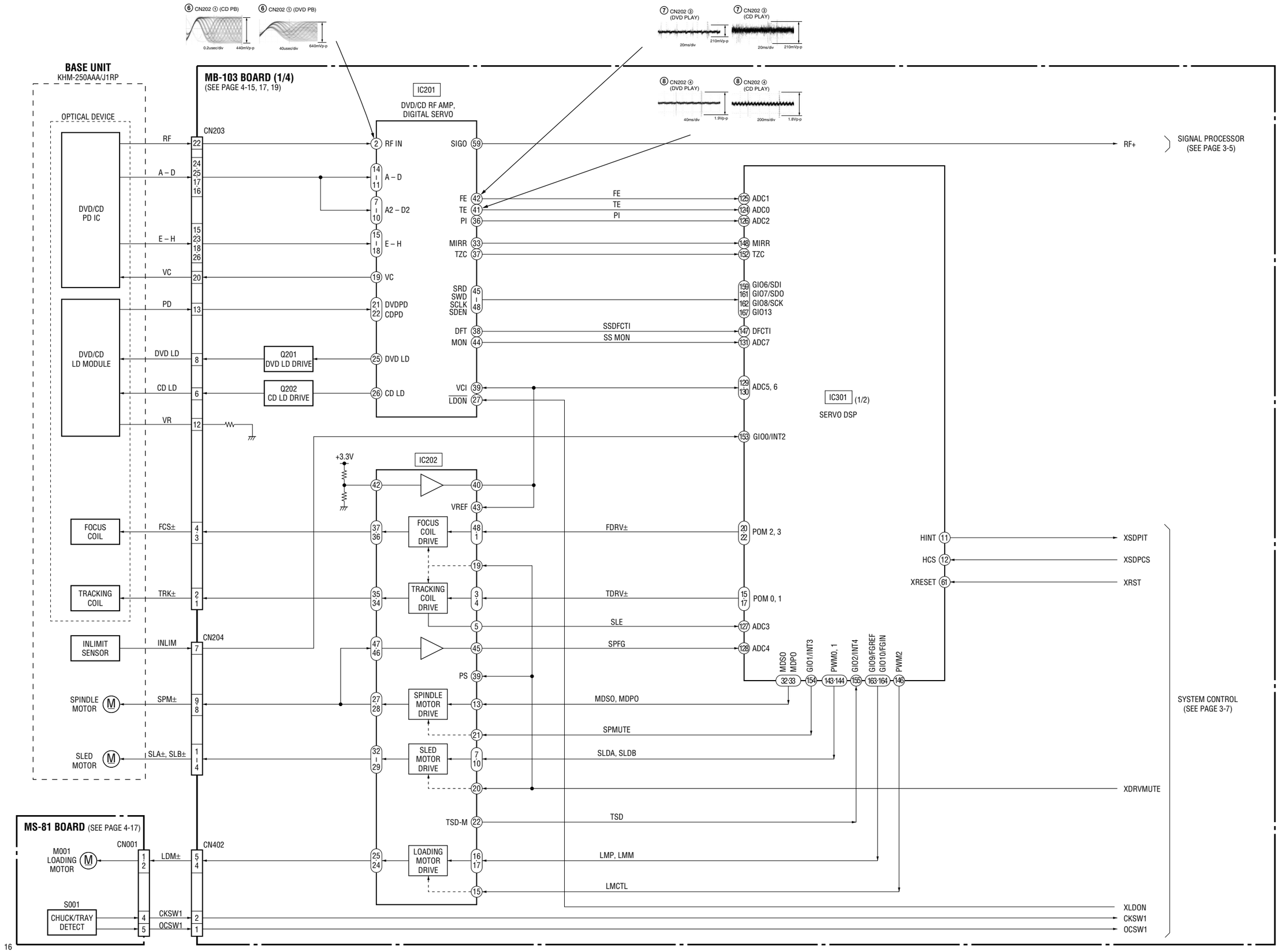
MEMO

SECTION 3
BLOCK DIAGRAMS

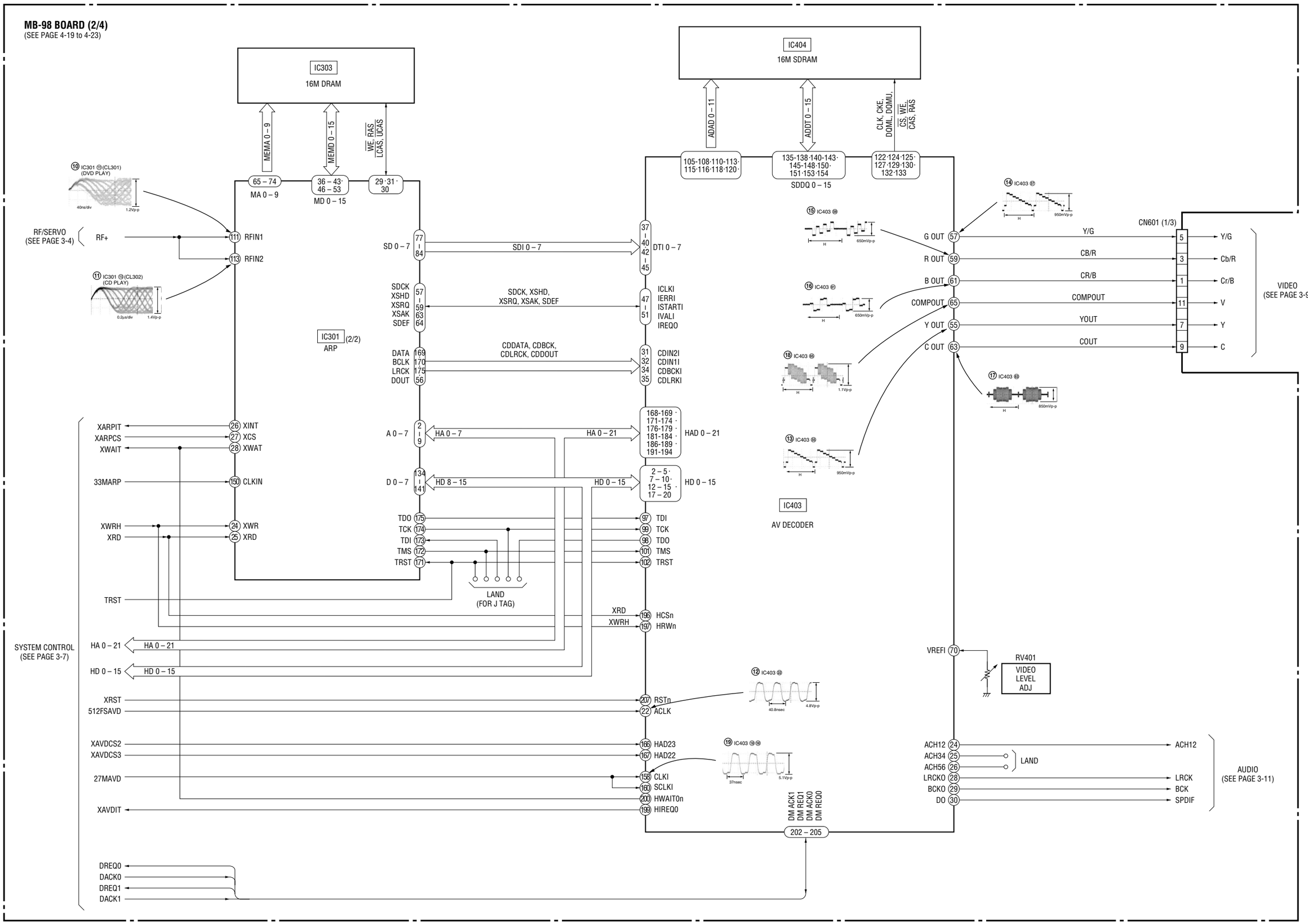
3-1. OVERALL BLOCK DIAGRAM



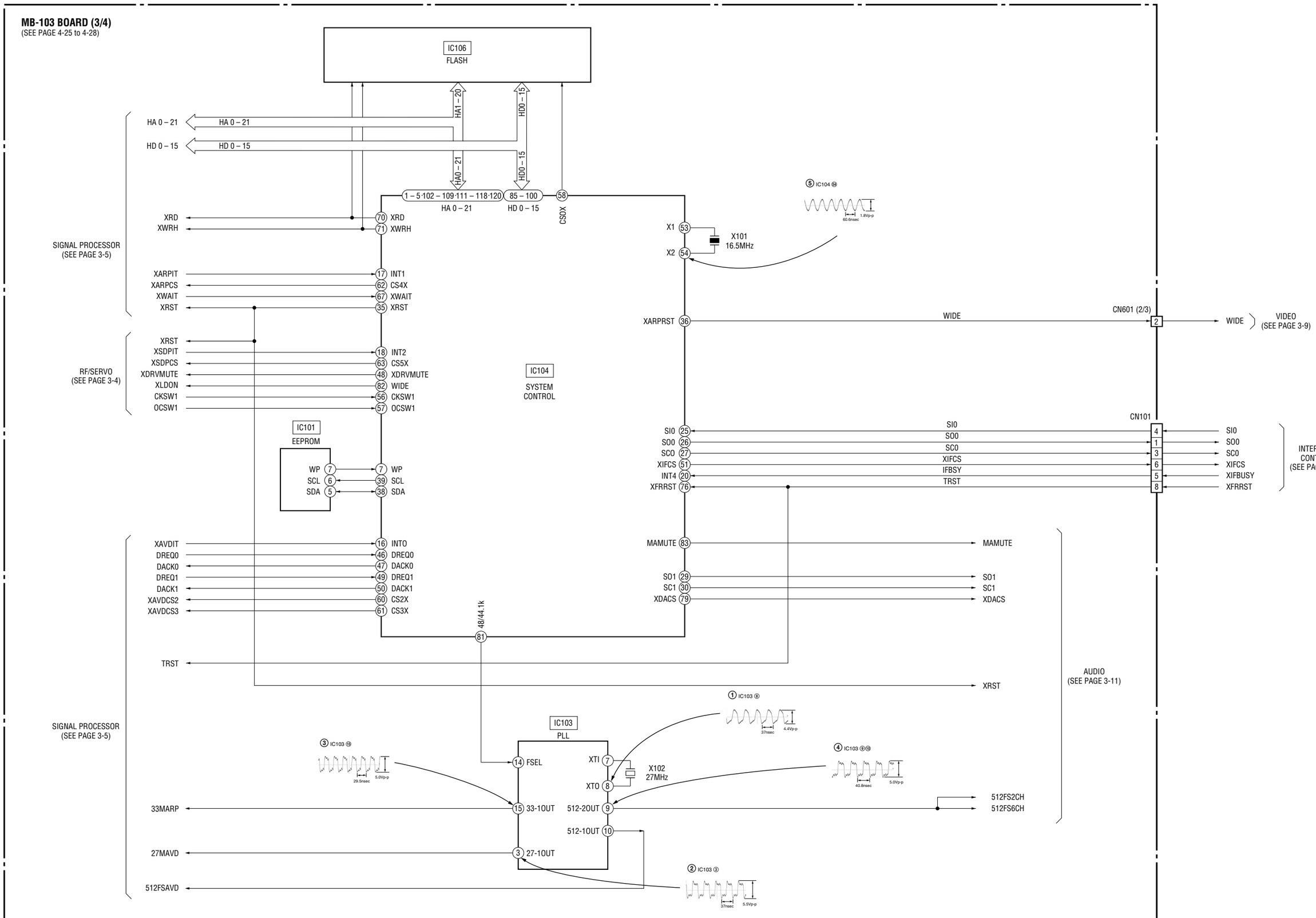
3-2. RF/SERVO BLOCK DIAGRAM



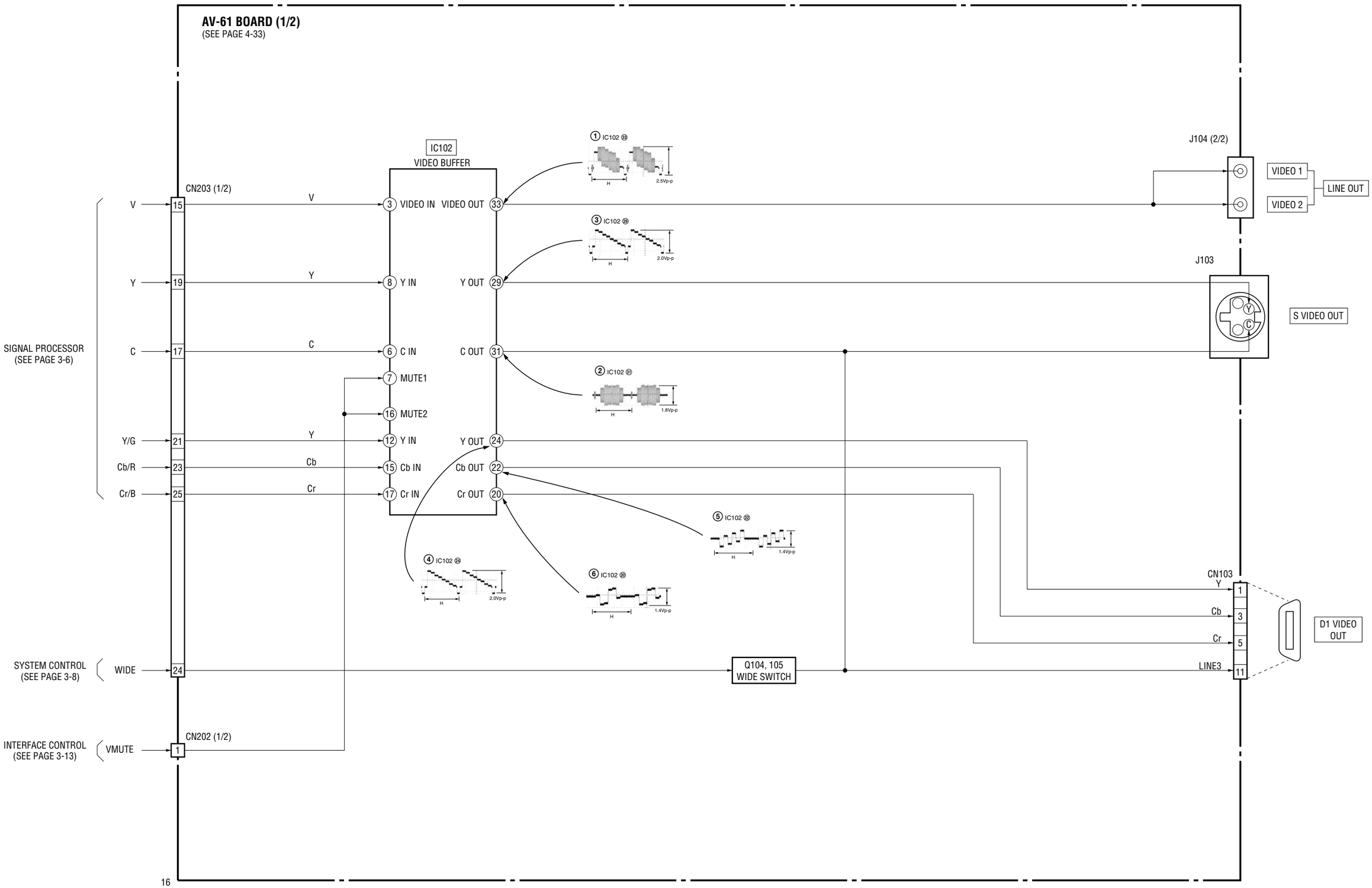
3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



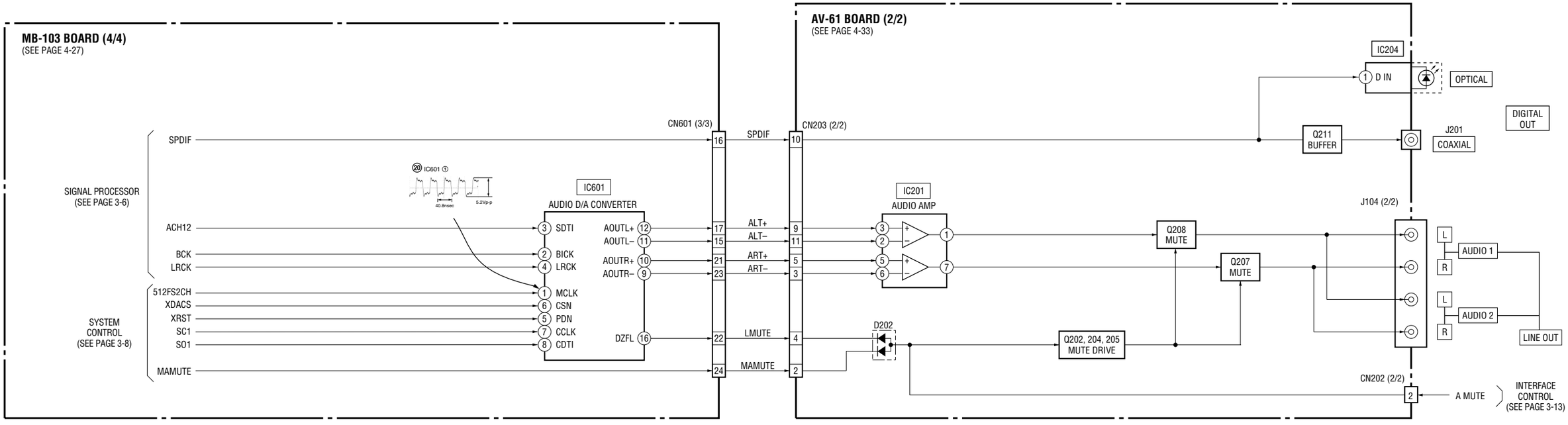
3-4. SYSTEM CONTROL BLOCK DIAGRAM



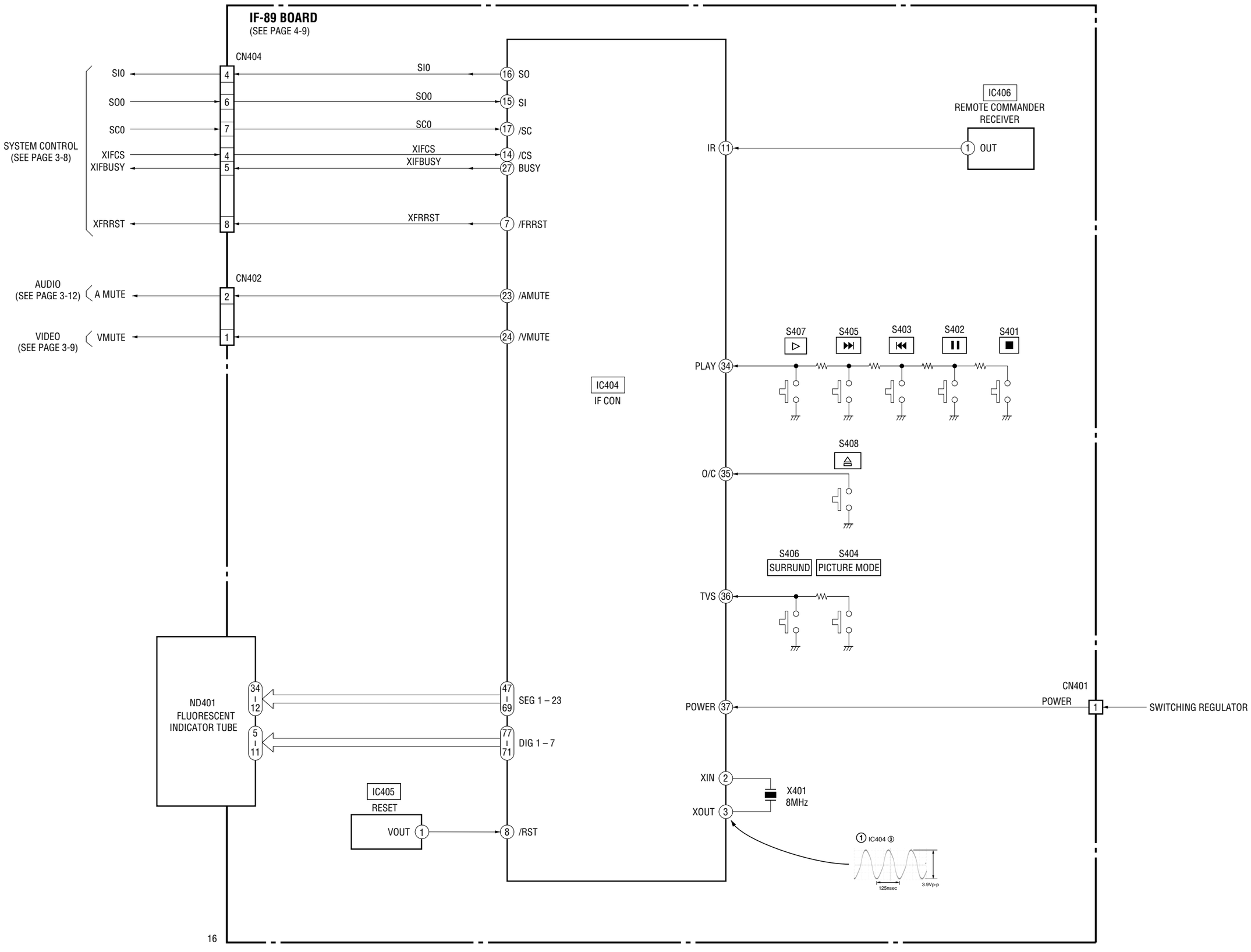
3-5. VIDEO BLOCK DIAGRAM



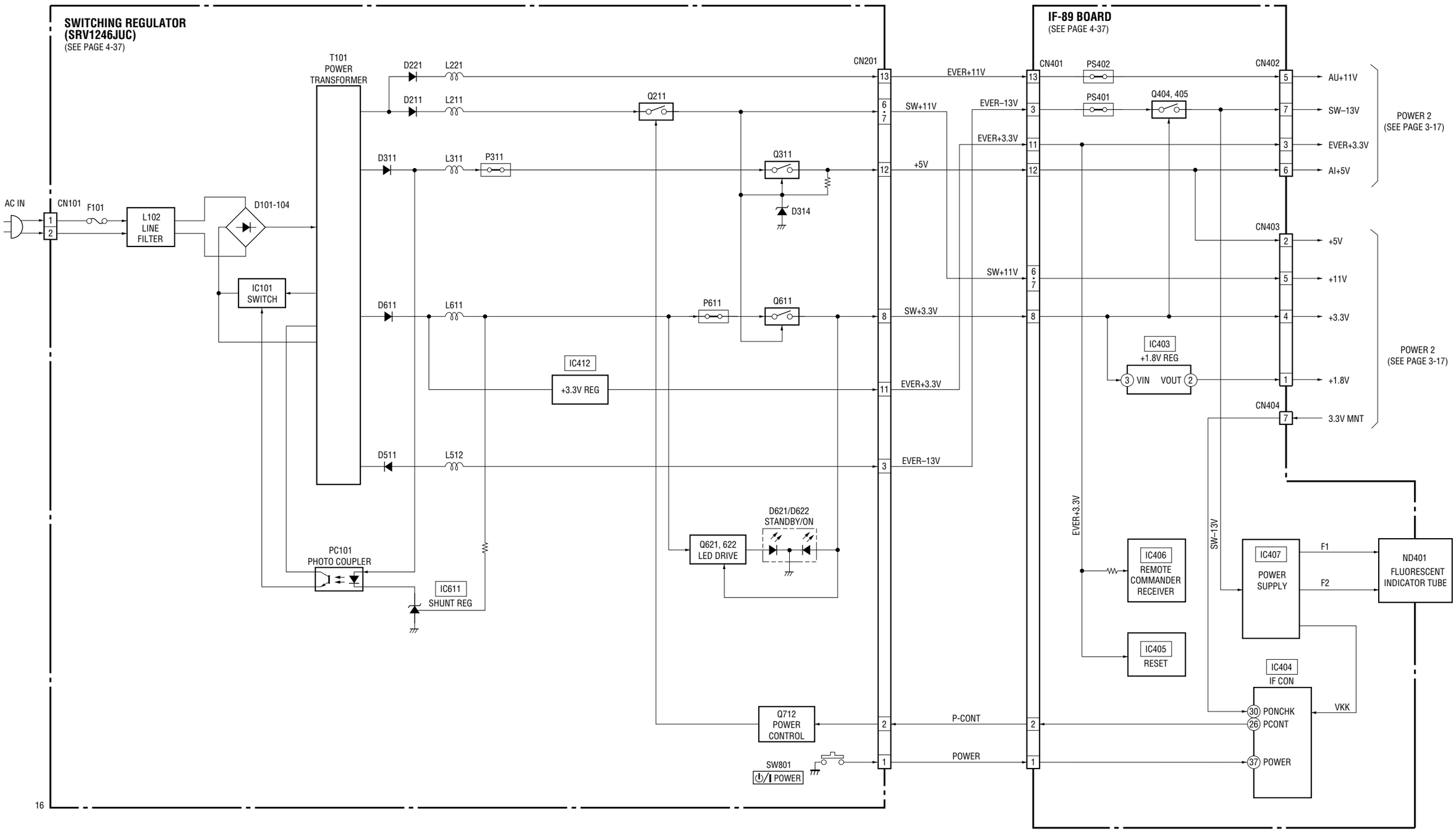
3-6. AUDIO BLOCK DIAGRAM



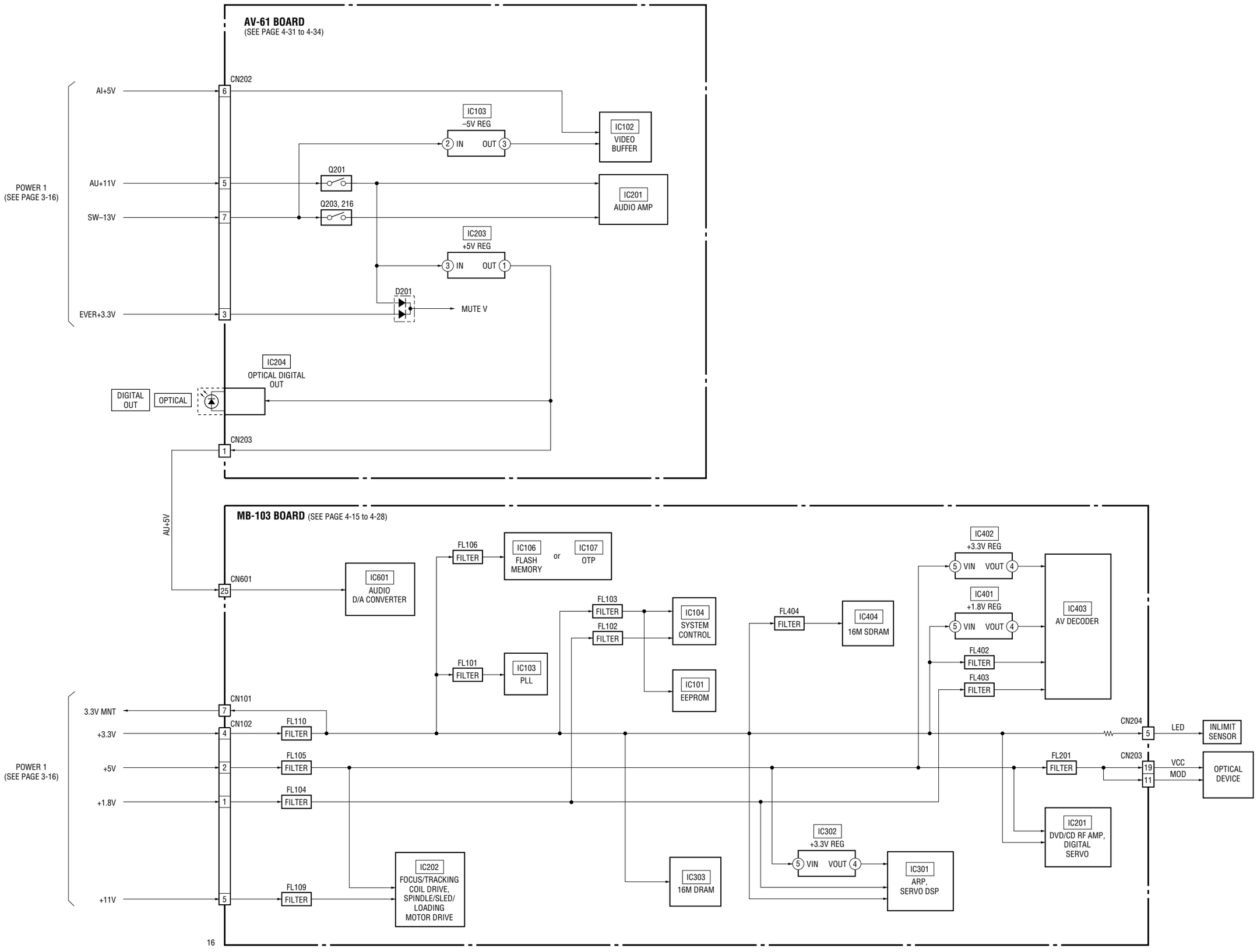
3-7. INTERFACE CONTROL BLOCK DIAGRAM



3-8. POWER BLOCK DIAGRAM (1/2)



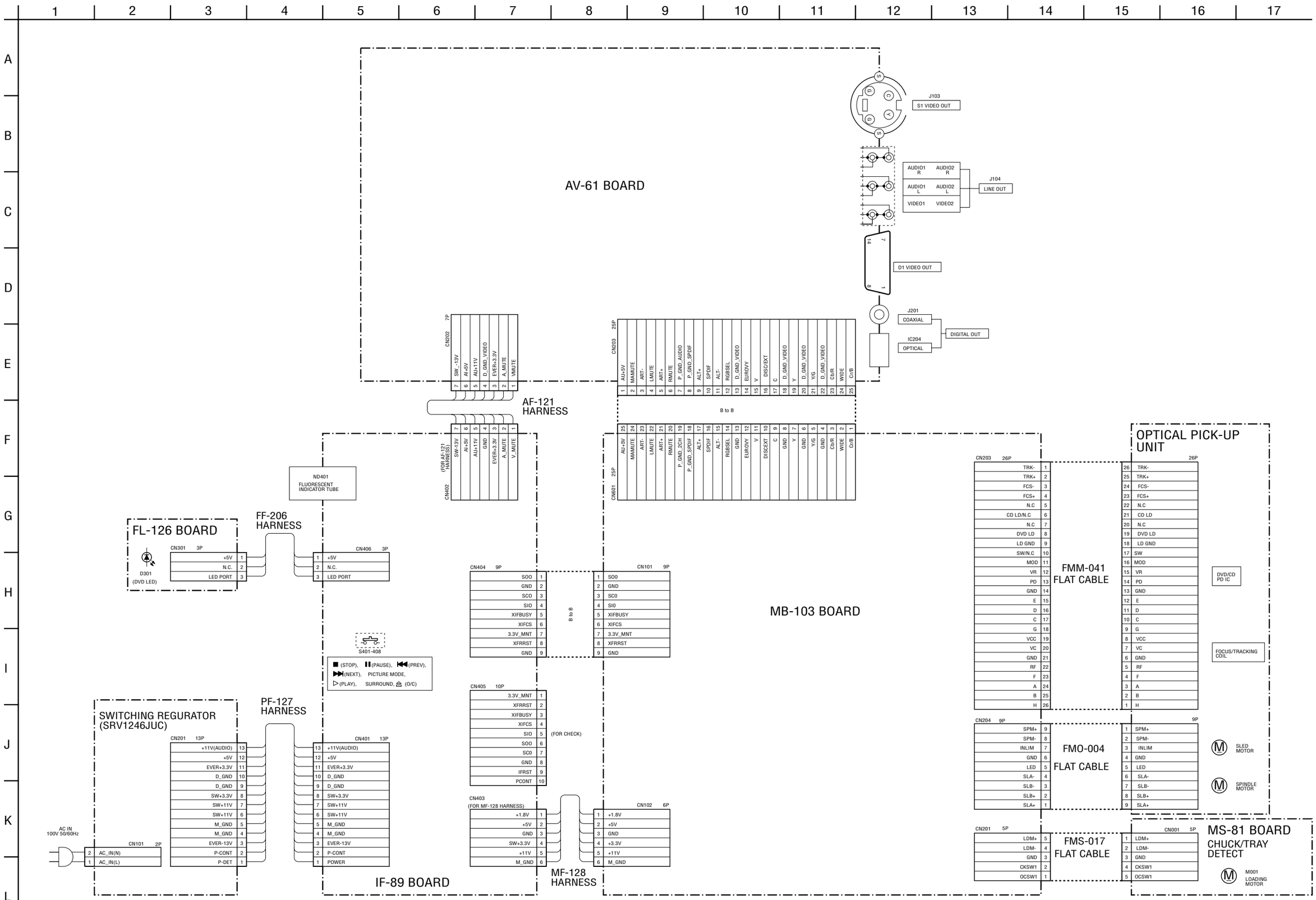
3-9. POWER BLOCK DIAGRAM (2/2)



MEMO

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)
- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

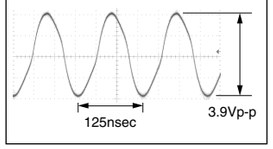
(For schematic diagrams)
- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 /10 W) un-less otherwise specified.
  kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, be-cause it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : non flammable resistor
- : fusible resistor
- : panel designation
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line
- B − : B– Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD refer-ence disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production toler-ances.

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, pleas include the board name.

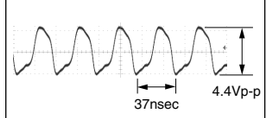
IF-089 BOARD

① IC404 ③

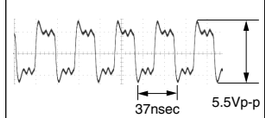


MB-103 BOARD

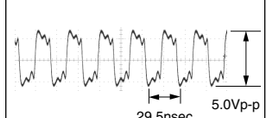
① IC103 ⑧



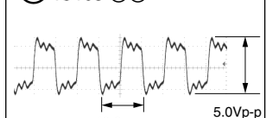
② IC103 ③



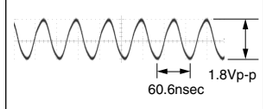
③ IC103 ⑮



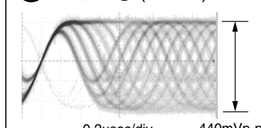
④ IC103 ⑨⑩



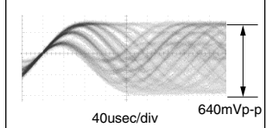
⑤ IC104 ㊹



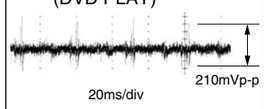
⑥ CN202 ① (CD PB)



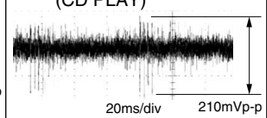
⑥ CN202 ① (DVD PB)



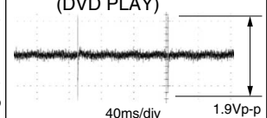
⑦ CN202 ③ (DVD PLAY)



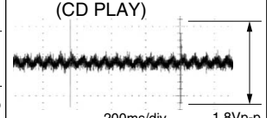
⑦ CN202 ③ (CD PLAY)



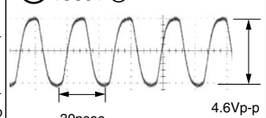
⑧ CN202 ④ (DVD PLAY)



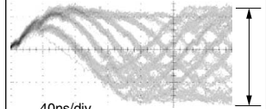
⑧ CN202 ④ (CD PLAY)



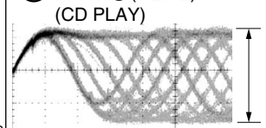
⑨ IC301 ⑱



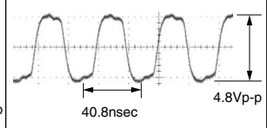
⑩ IC301 ⑪ (CL301) (DVD PLAY)



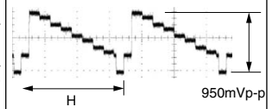
⑪ IC301 ⑲ (CL302) (CD PLAY)



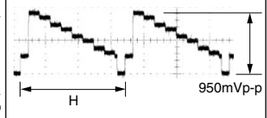
⑫ IC403 ㉒



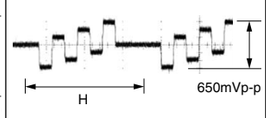
⑬ IC403 ㊺



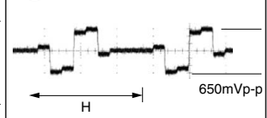
⑭ IC403 ㊼



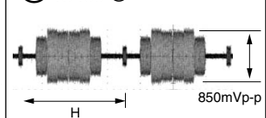
⑮ IC403 ㊾



⑯ IC403 ㊶

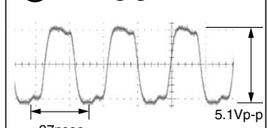


⑰ IC403 ㊸

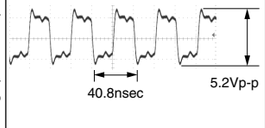


⑱ IC403 ㊺

⑲ IC403 ㊽㊿

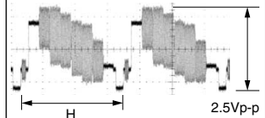


⑳ IC601 ①

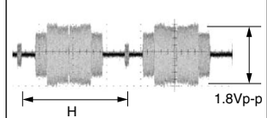


AV-61 BOARD

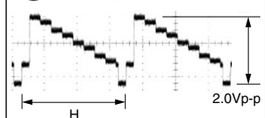
① IC102 ㉝



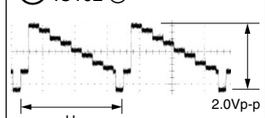
② IC102 ㉛



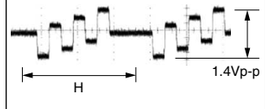
③ IC102 ㉙



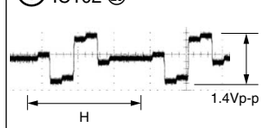
④ IC102 ㉔



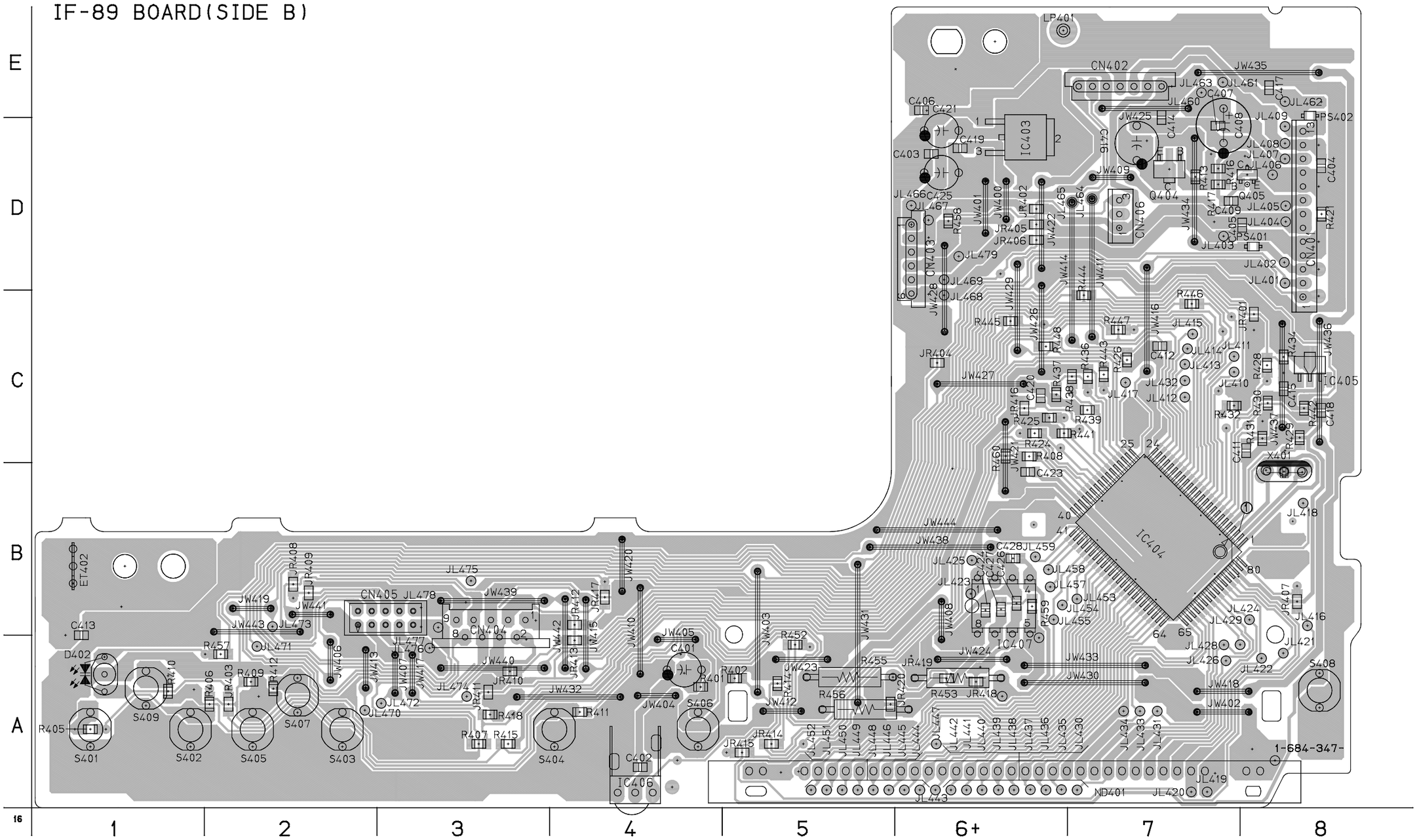
⑤ IC102 ㉒



⑥ IC102 ⑳



IF-89 (IF COM) PRINTED WIRING BOARD

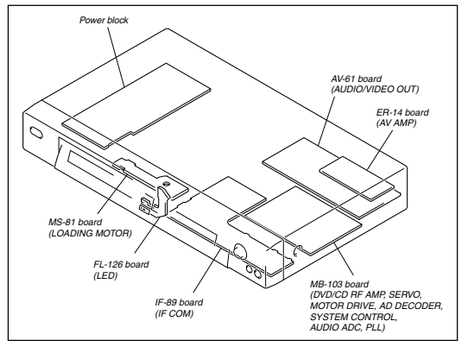


For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

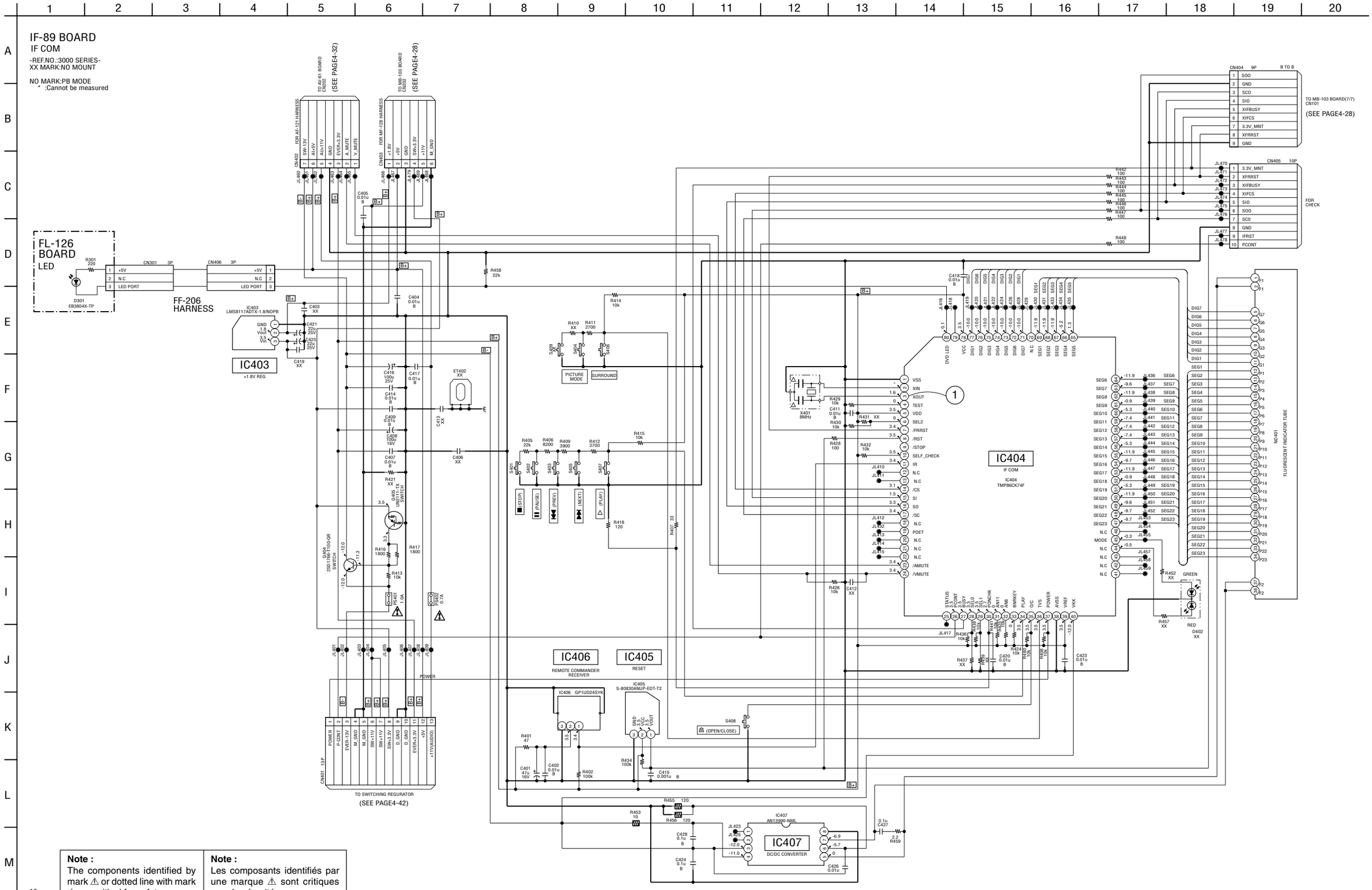
IF-89 BOARD

CN401	D-8		Q404	D-7
CN402	E-7		Q405	D-8
CN403	D-6			
CN404	B-3		S401	A-1
CN405	B-3		S402	A-2
CN406	D-7		S403	A-2
			S404	A-4
IC403	D-6		S405	A-2
IC404	B-7		S406	A-4
IC405	C-8		S407	A-2
IC406	A-4		S408	A-8
IC407	B-6			



For Schematic Diagram

- Refer to page 4-7 for printed wiring board.
- Refer to page 4-5 for waveform.



Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

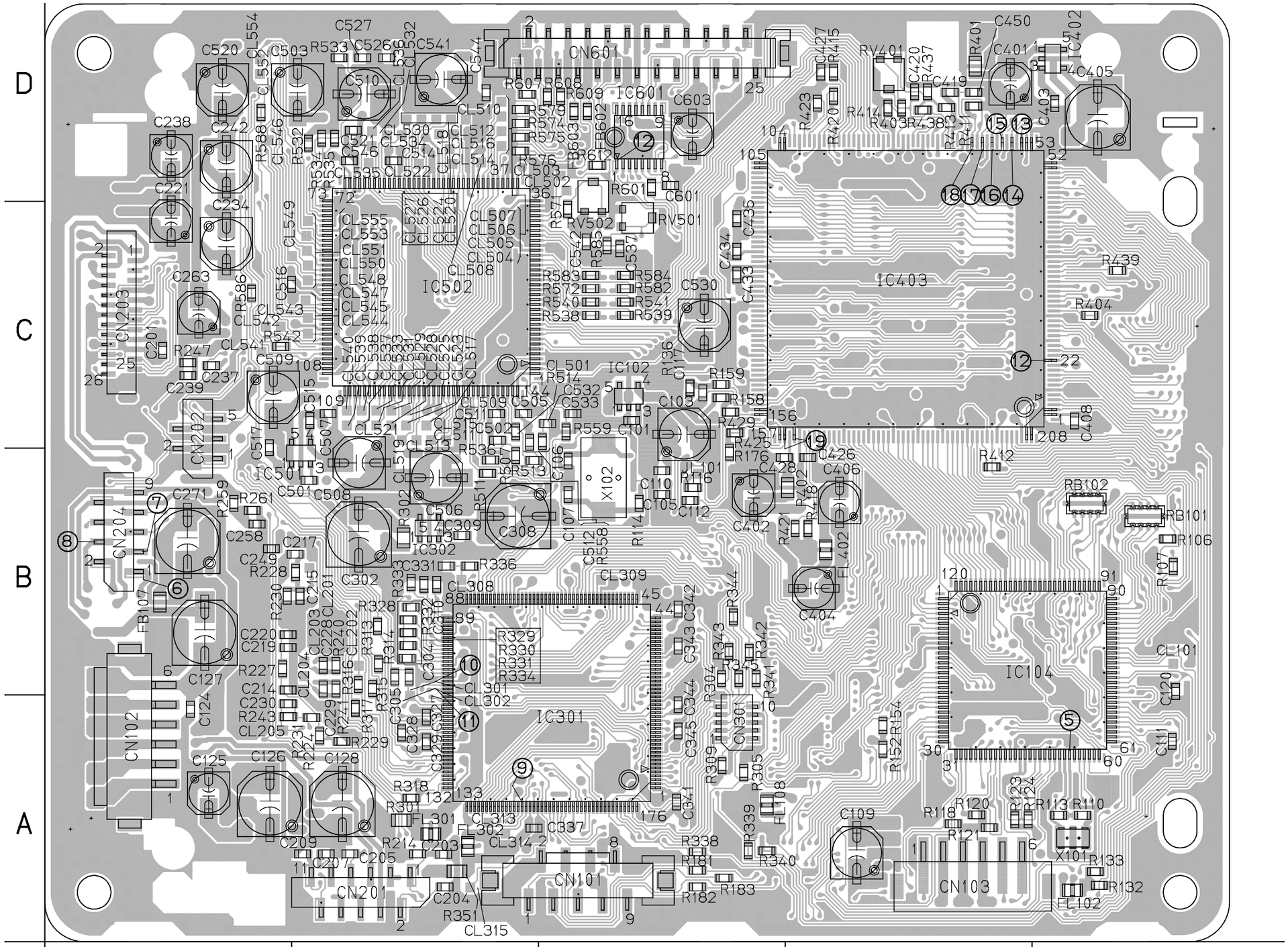
MB-103 (DVD/CD RF AMP, DIGITAL SERVO, MOTOR DRIVE, SERVO, AV DECODER, SDRAM, SYSTEM CONTROL, AUDIO DAC, PLL) PRINTED WIRING BOARD

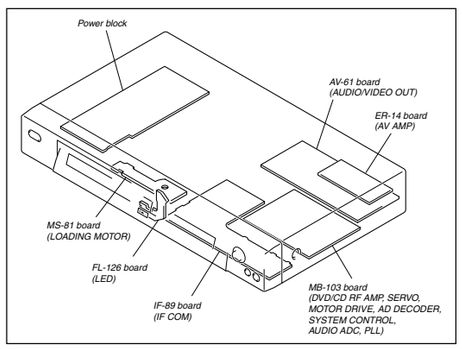
MB-103 BOARD (SIDE A)

CN101	A-3
CN102	A-1
CN103	A-4
CN201	A-2
CN203	C-1
CN204	B-1
CN601	D-1
IC104	B-4
IC301	A-2
IC302	B-2
IC402	D-5
IC403	C-4
IC601	D-3
RV401	D-4

MB-103 BOARD(SIDE A)

• : Uses unleaded solder.





For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

MB-103 BOARD(SIDE B)

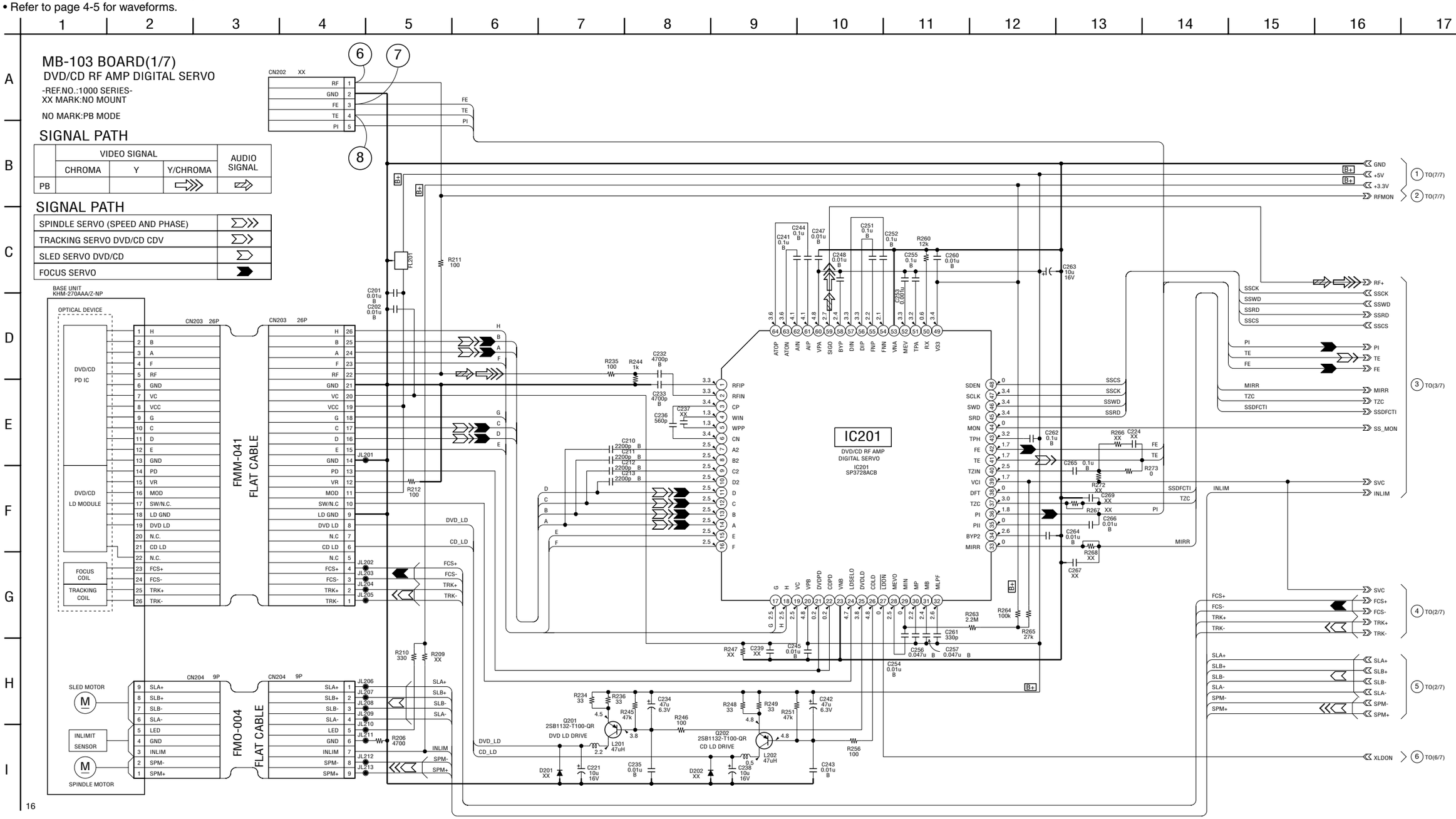
• : Uses unleaded solder.

MB-103 BOARD (SIDE B)

IC101	A-1
IC103	B-3
IC106	B-1
IC201	C-4
IC202	B-4
IC303	A-3
IC401	B-2
IC404	C-2
Q201	C-5
Q202	D-5

For Schematic Diagram

- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



For Schematic Diagram

• Refer to page 4-11 for printed wiring board.

MB-103 BOARD(2/7)

MOTOR DRIVE

-REF.NO.:1000 SERIES-

XX MARK:NO MOUNT

NO MARK:PB MODE

SIGNAL PATH

SPINDLE SERVO (SPEED AND PHASE)	
TRACKING SERVO DVD/CD CDV	
SLED SERVO DVD/CD	
FOCUS SERVO	

MS-81 BOARD

S001 CHUCK/TRAY DETECT

M001 LOADING MOTOR

CN201 5P

NOT USE

IC202 MOTOR DRIVE

IC202 FAN8034L

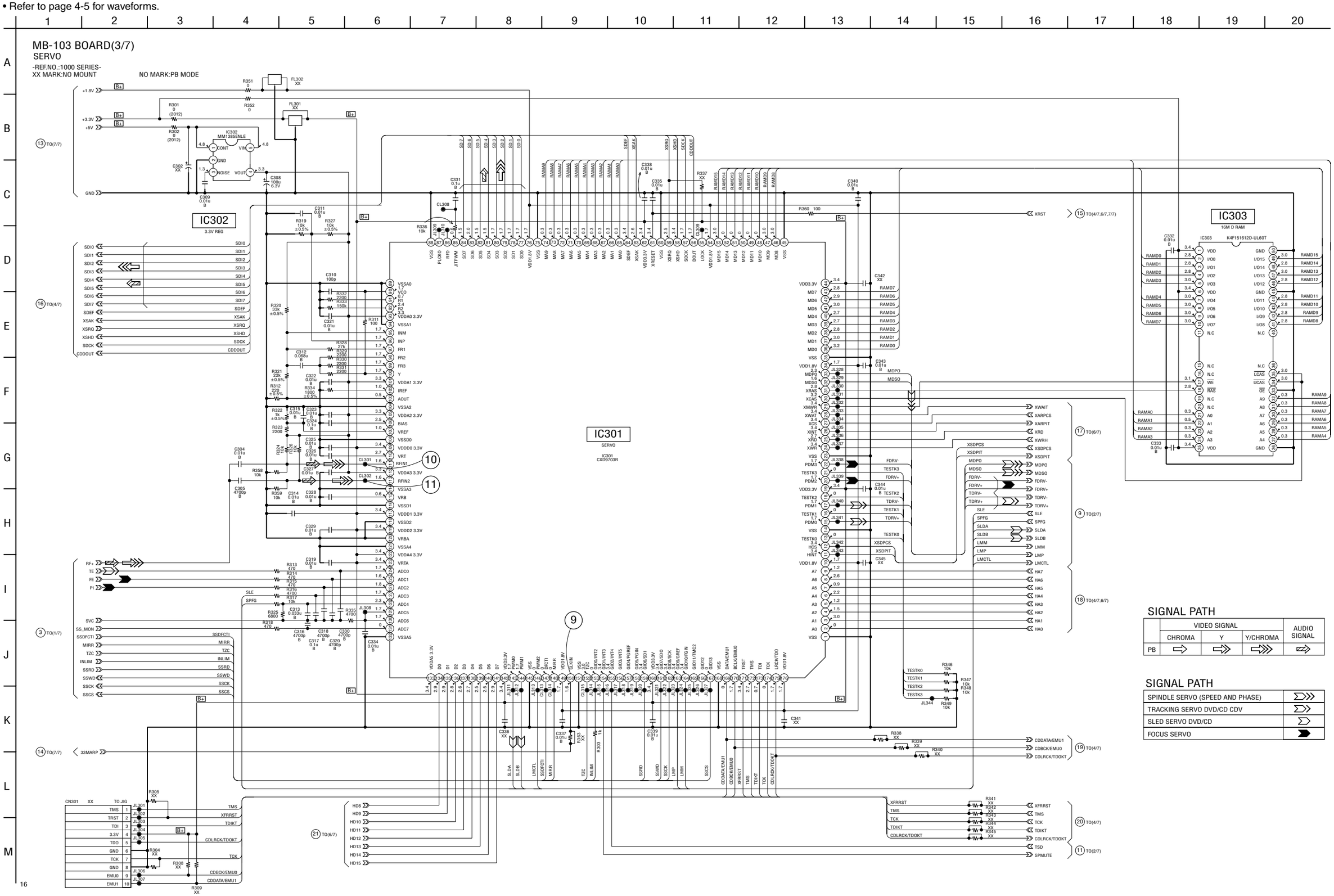
POWER SAVE

MUTE12 MUTE34 MUTE5 TSD-M

MOTOR DRIVE

MB-103 (2/7)

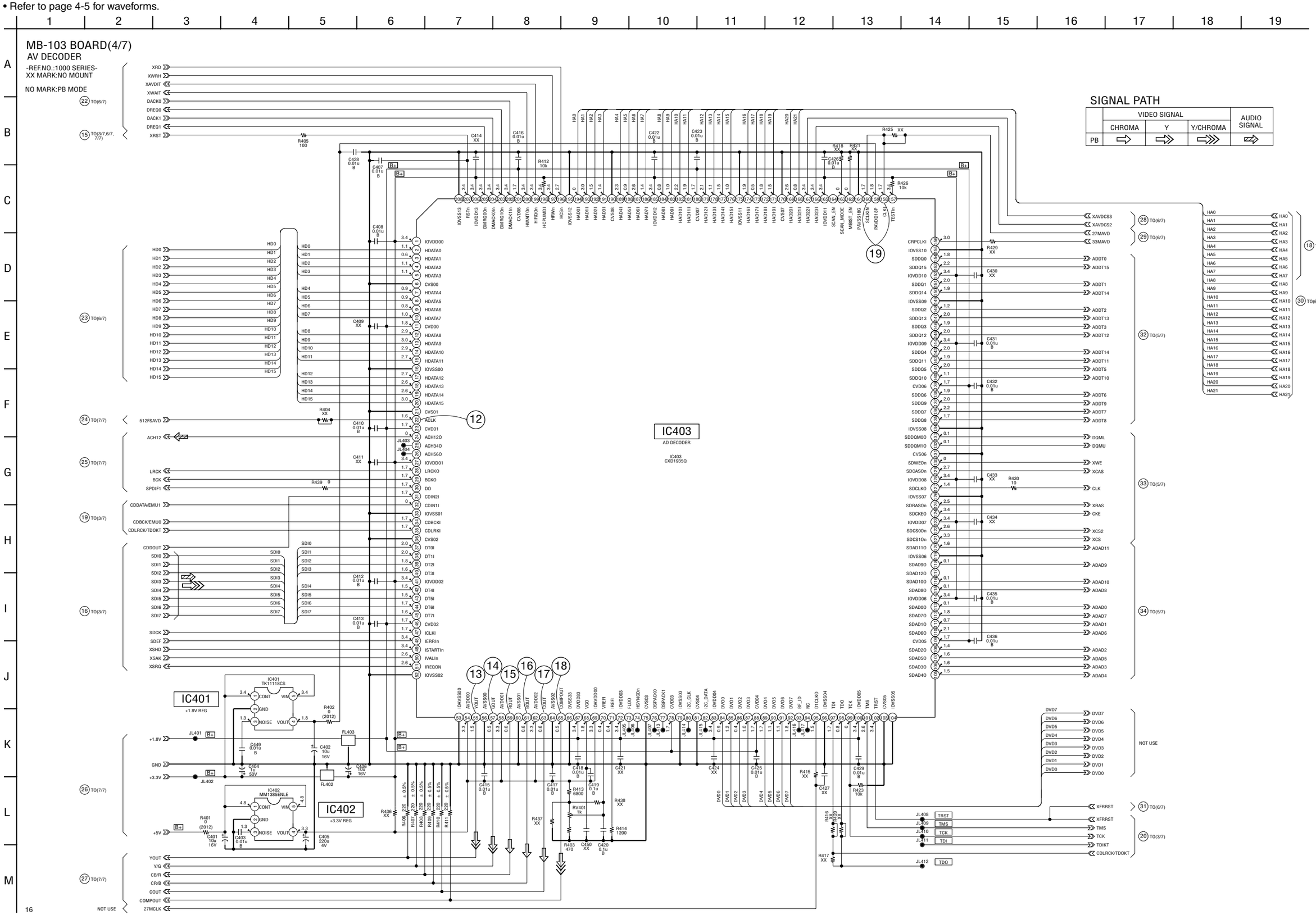
For Schematic Diagram
- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



SERVO
MB-103 (3/7)

For Schematic Diagram

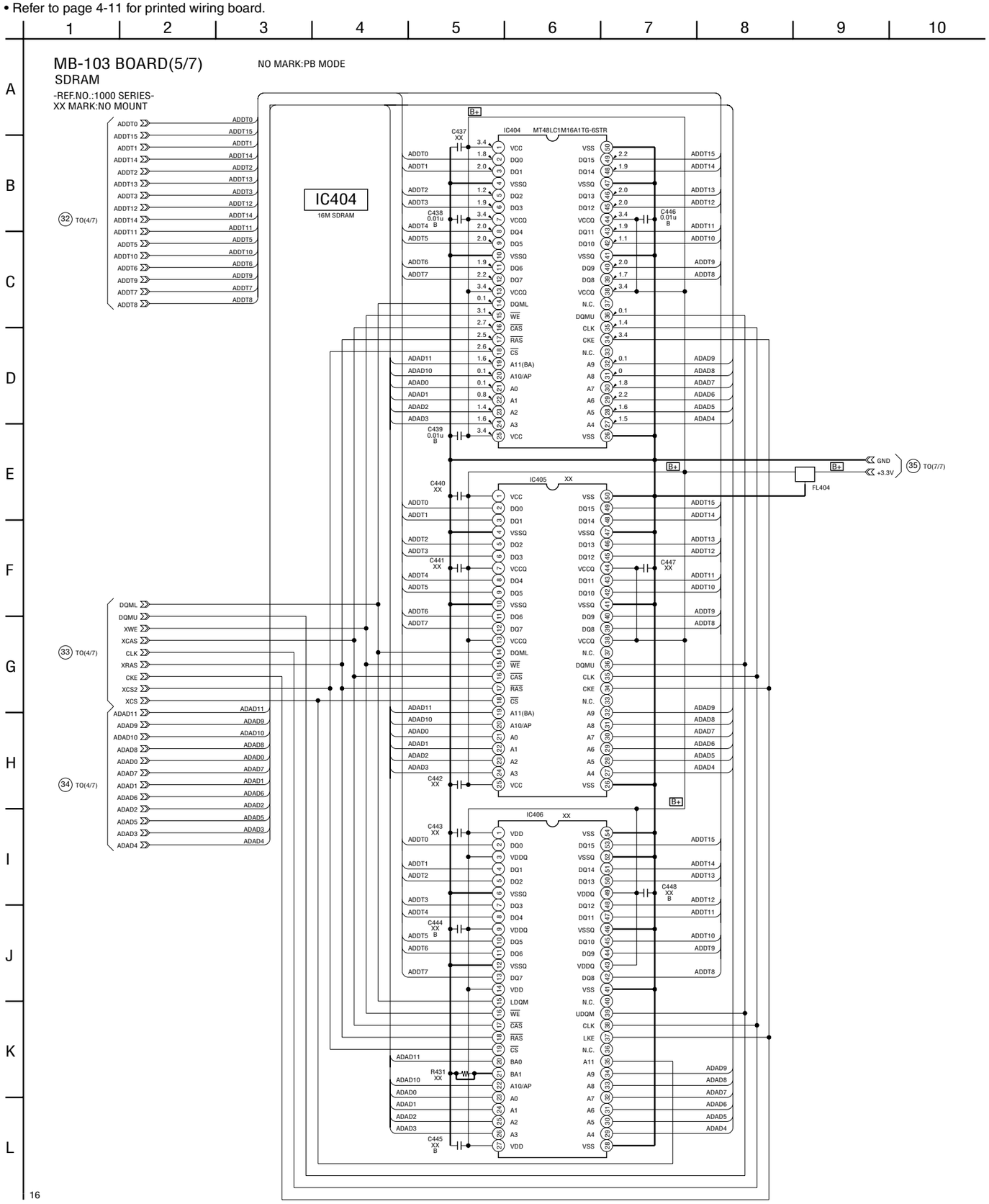
- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



AV DECODER
MB-103 (4/7)

For Schematic Diagram

• Refer to page 4-11 for printed wiring board.



For Schematic Diagram

- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveform.

MB-103 BOARD(6/7)

SYSTEM CONTROL

-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

IC101
EEP ROM
M24C16-WMN6T

IC104
SYSTEM CONTROL
MB91307RPFV-G-BND-E1

IC106
FLASH MEMORY
MBM29LV160BE-90TN

IC107 XX

IC108 XX

RB101 XX

RB102 10k

X101 16.5MHz

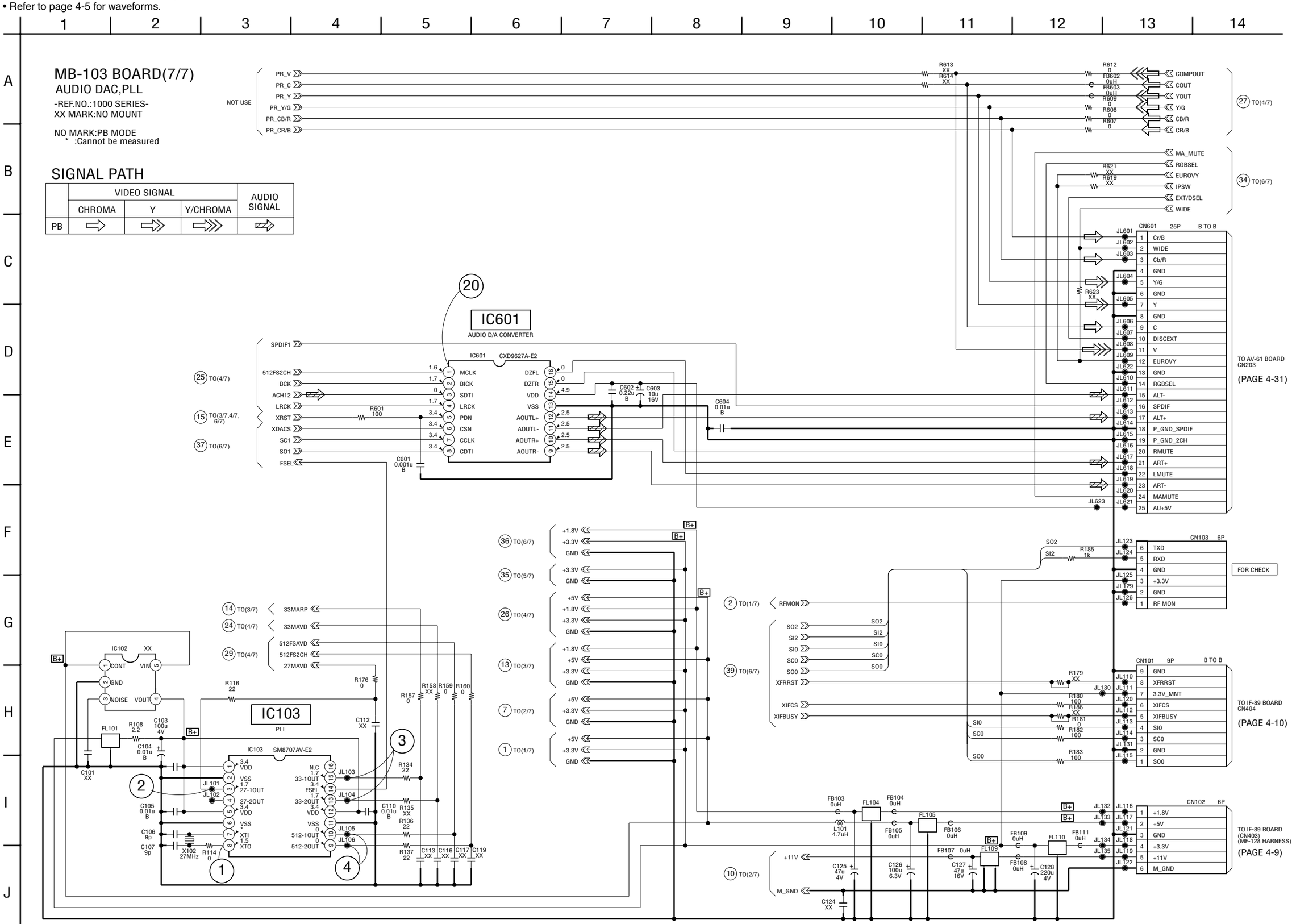
FL102

FL103

FL106

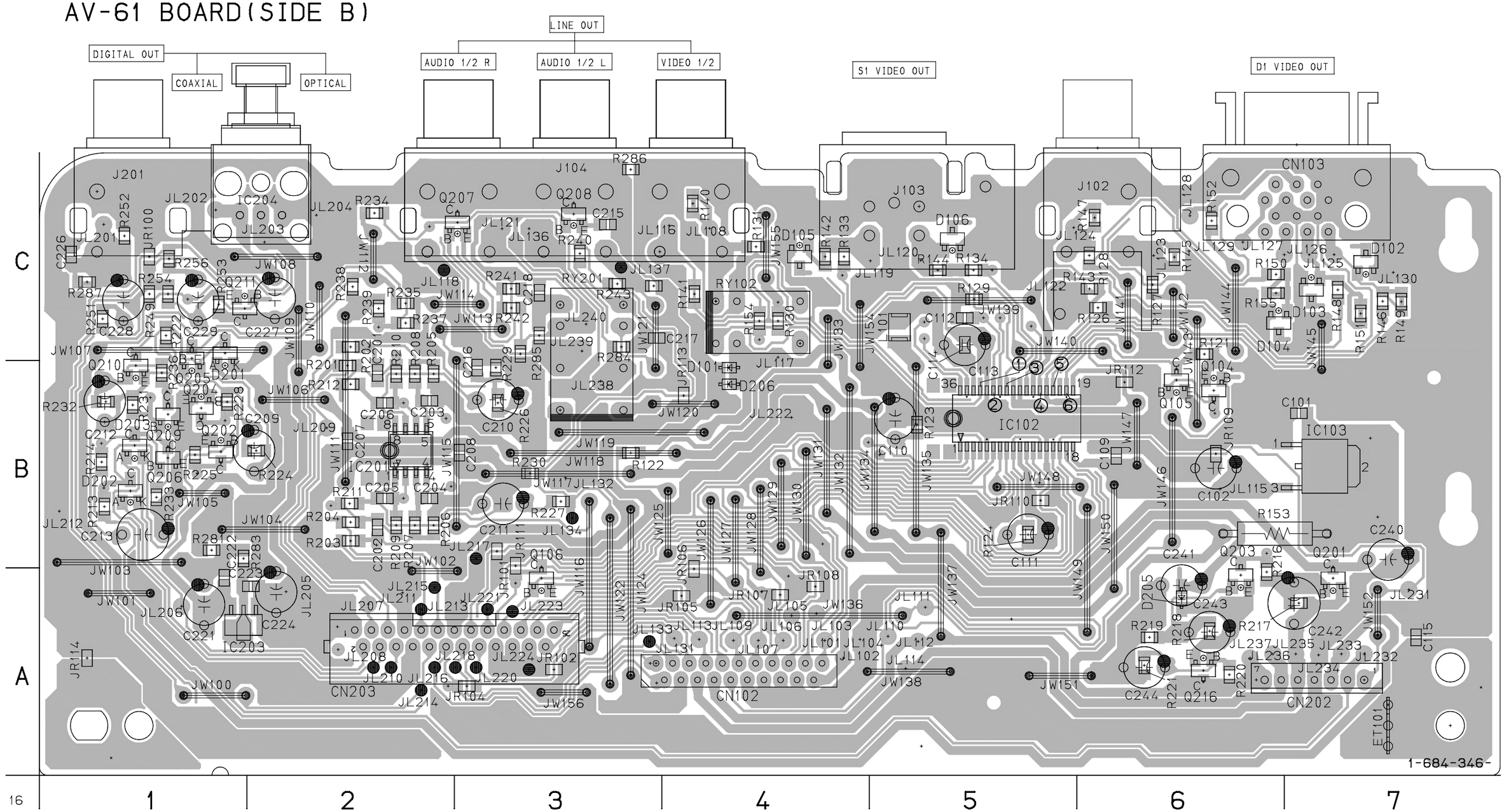
FL108 XX

For Schematic Diagram
- Refer to page 4-11 for printed wiring board.
- Refer to page 4-5 for waveforms.



AV-61 (AUDIO OUT, VIDEO OUT) PRINTED WIRING BOARD

• : Uses unleaded solder.

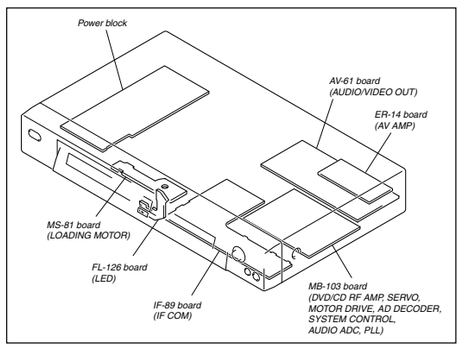


For printed wiring board

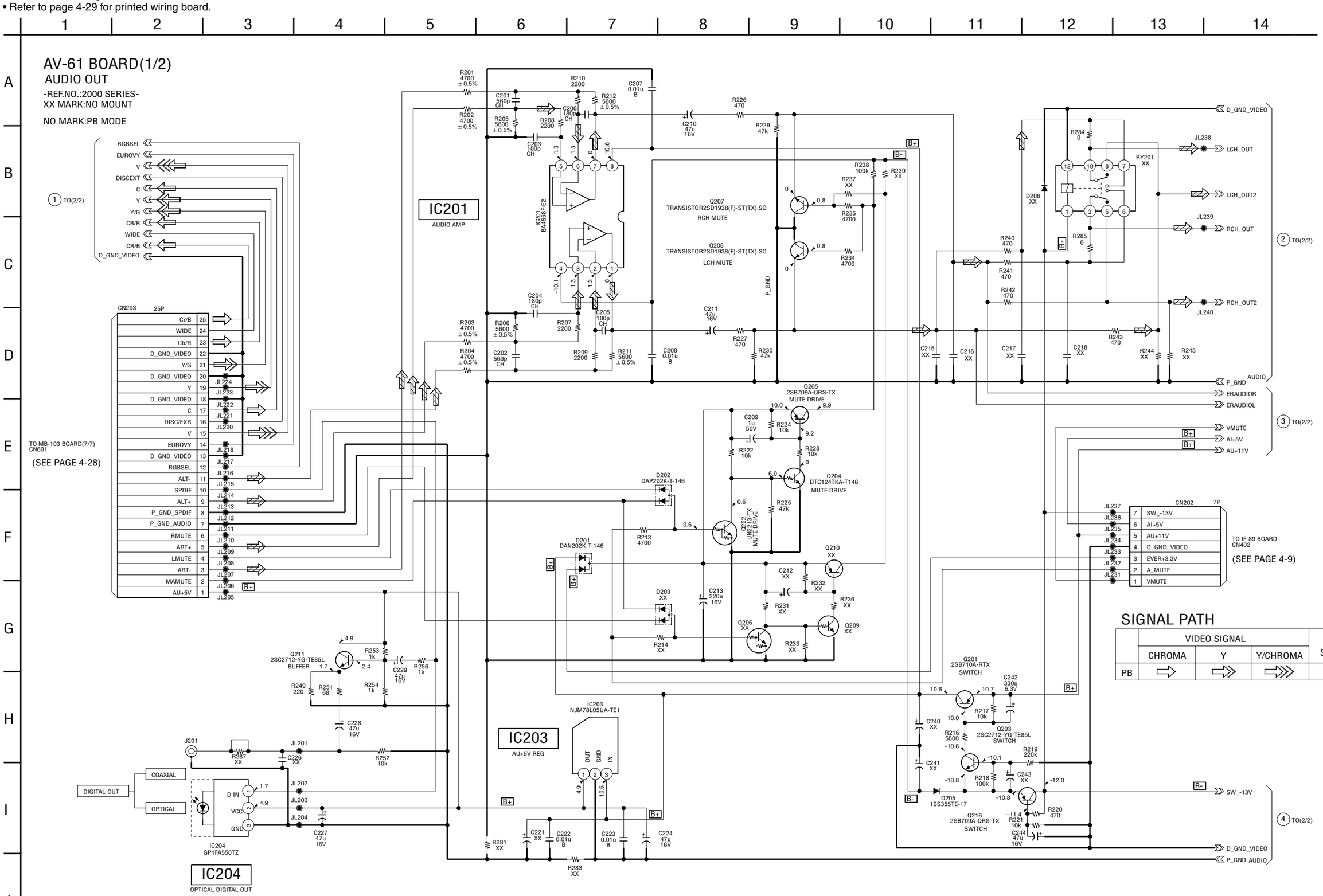
There are a few cases that the part printed on this diagram isn't mounted in this model.

AV-61 BOARD

CN401	D-8	Q404	D-7
CN402	E-7	Q405	D-8
CN403	D-6		
CN404	B-3	S401	A-1
CN405	B-3	S402	A-2
CN406	D-7	S403	A-2
		S404	A-4
IC403	D-6	S405	A-2
IC404	B-7	S406	A-4
IC405	C-8	S407	A-2
IC406	A-4	S408	A-8
IC407	B-6		


Power block
AV-61 board (AUDIO/VIDEO OUT)
ER-14 board (AV AMP)
MS-81 board (LOADING MOTOR)
FL-126 board (LED)
IF-89 board (IF COM)
MB-103 board (DVD/CD RF AMP, SERVO, MOTOR DRIVE, AD DECODER, SYSTEM CONTROL, AUDIO ADC, PLL)

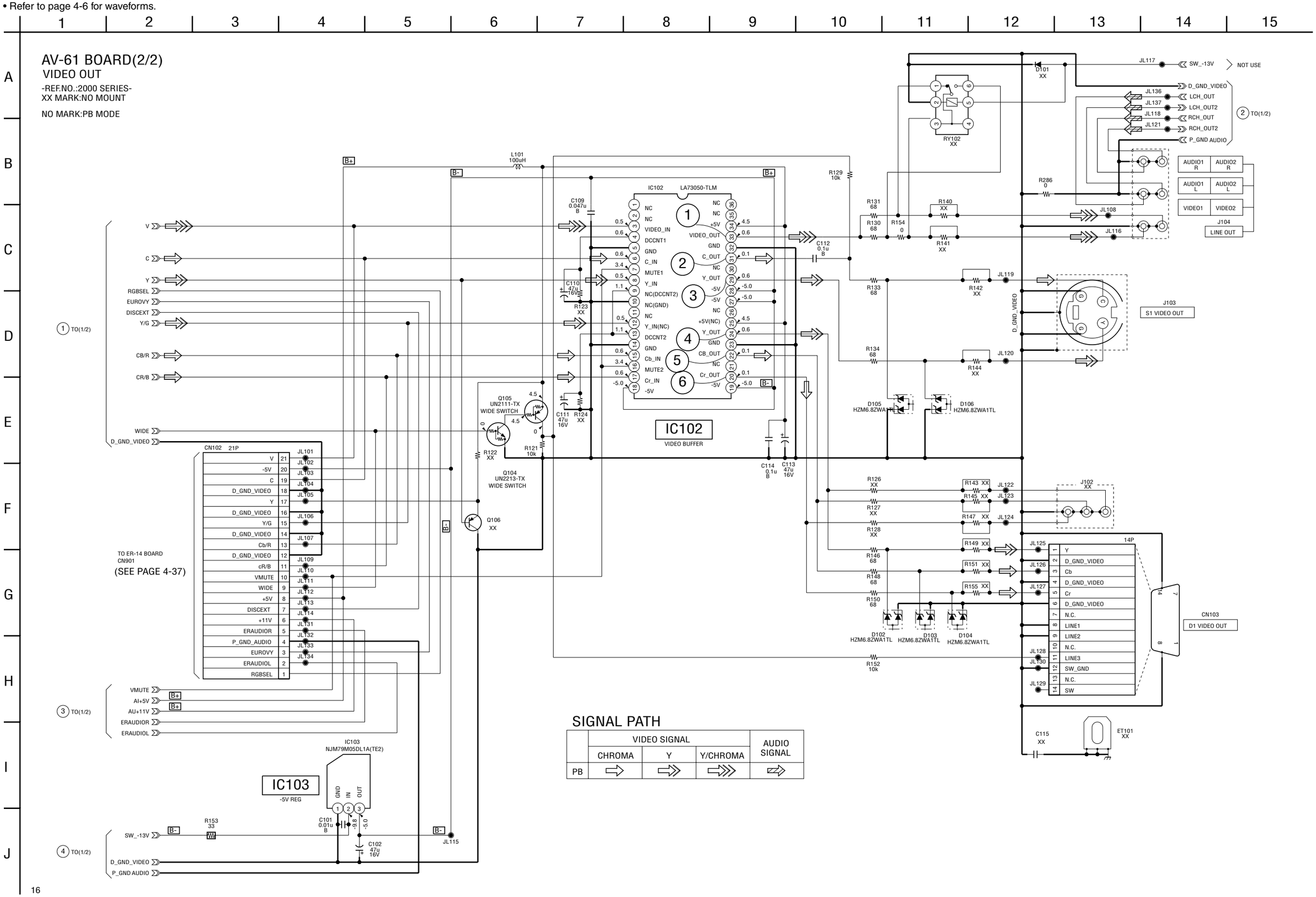
For Schematic Diagram
• Refer to page 4-29 for printed wiring board.



16

AUDIO OUT
AV-61 (1/2)

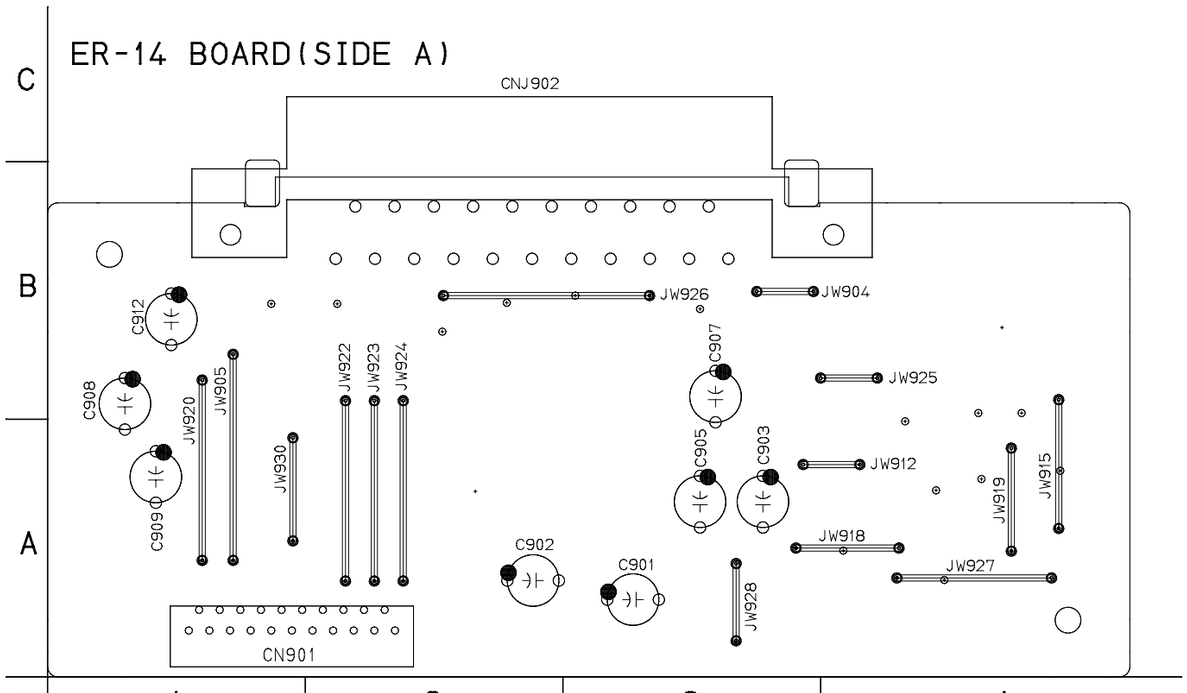
For Schematic Diagram
- Refer to page 4-29 for printed wiring board.
- Refer to page 4-6 for waveforms.

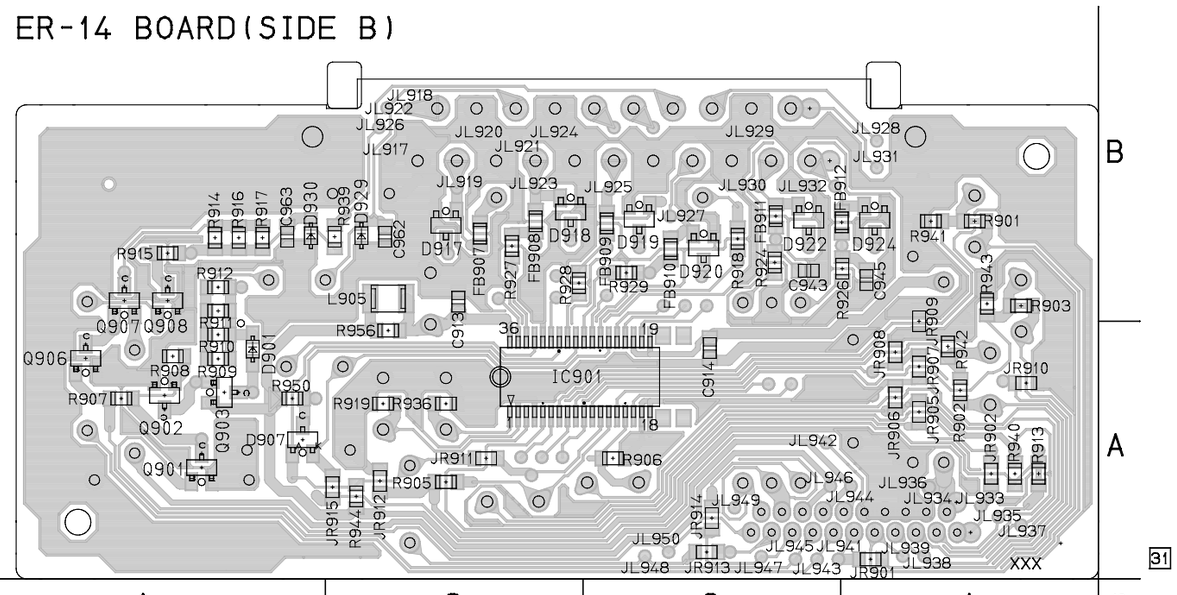


16

ER-14 (AV AMP) PRINTED WIRING BOARD

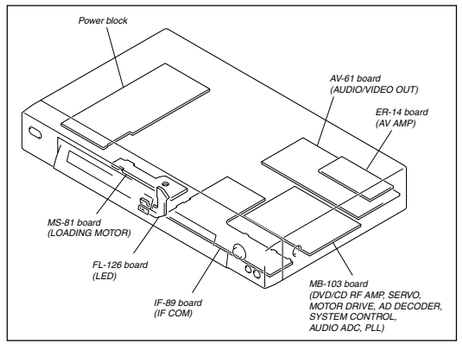
• : Uses unleaded solder.





For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



ER-14 BOARD

LINE OUT

-REF.NO.: SERIES-
XX MARK:NO MOUNT

TO AV-61 BOARD(2/2)
CN102

(SEE PAGE 4-33)

CN901 21P

V	1	JL933
-5V	2	JL934
C	3	JL935
GND	4	JL936
Y	5	JL937
GND	6	
Y/G	7	JL938
GND	8	
Cb/R	9	JL939
GND	10	
Cr/B	11	JL941
VMUTE	12	JL942
WIDE	13	JL943
+5V	14	JL944
DISCEXT	15	JL945
+11V	16	JL946
ERAUDIOR	17	JL947
GND(AU)	18	JL948
EUROVY	19	JL949
ERAUDIOL	20	JL950
RGBSEL	21	

IC901
VIDEO BUFFER

IC901 LA73052-TLM

1.1	1	DCCNT1	+5V	36	4.7
	2	GND	NC	35	
0.6	3	DCCNT2	R/C_OUT	34	-0.6
	4	GND	MUTE1	33	3.4
0.5	5	C_IN	GND	32	
	6	NC	NC	31	
0	7	R_IN	SW1	30	3.4
	8	NC	G_OUT	29	-0.6
0	9	G_IN	MUTE2	28	3.4
	10	NC	B_OUT	27	-0.6
0	11	B_IN	NC	26	
3.3	12	SW2	V/Y_OUT	25	-0.1
0.1	13	V_IN	MUTE3	24	3.4
	14	NC	NC	23	
0	15	Y_IN	NC	22	
	16	NC	-5V	21	-5.1
	17	DCCNT3	NC	20	
	18	GND	-5V	19	-5.1

L905 100uH
R956 XX
C913 0.22u B
C905 47u 16V
C903 47u 16V
C907 47u 16V
C914 0.22u B
R913 XX
R901 XX
C912 XX
R902 0
C909 XX
R903 XX
C908 XX
C901 47u 16V
C902 47u 16V
R905 47k
R906 47k
R940 XX
R941 XX
R942 XX
R943 XX
R919 XX
R936 XX
R927 68
R928 68
R929 68
R918 68
D907 DAP202K-T-146
R950 22k
R944 XX
B+
B-

Q907 UN2111-TX
Q906-908 FUNCTION SWITCH
Q906 UN2213-TX
Q908 UN2211-TX
R916 2200
R914 2200
R917 2200
R915 1k
Q902.903 BLANKING SWITCH
Q902 2SD601A-QRS-TX
Q903 UN2111-TX
Q901 UN2213-TX SWITCH
D901 1SS355TE-17
R907 47k
R908 220k
R909 330
R910 330
R911 330
R912 330

FB907 0uH
FB908 0uH
FB909 0uH
FB910 0uH
D917 HZM6.8ZWA1TL
D918 HZM6.8ZWA1TL
D919 HZM6.8ZWA1TL
D920 HZM6.8ZWA1TL
D929 UDZ-TE-17-6.2B
D930 UDZ-TE-17-13B
C962 100p
C963 100p
R939 47
C943 100p
C945 100p
R957 0uH
R958 0uH
D922 XX
D924 XX
R924 470
R926 470

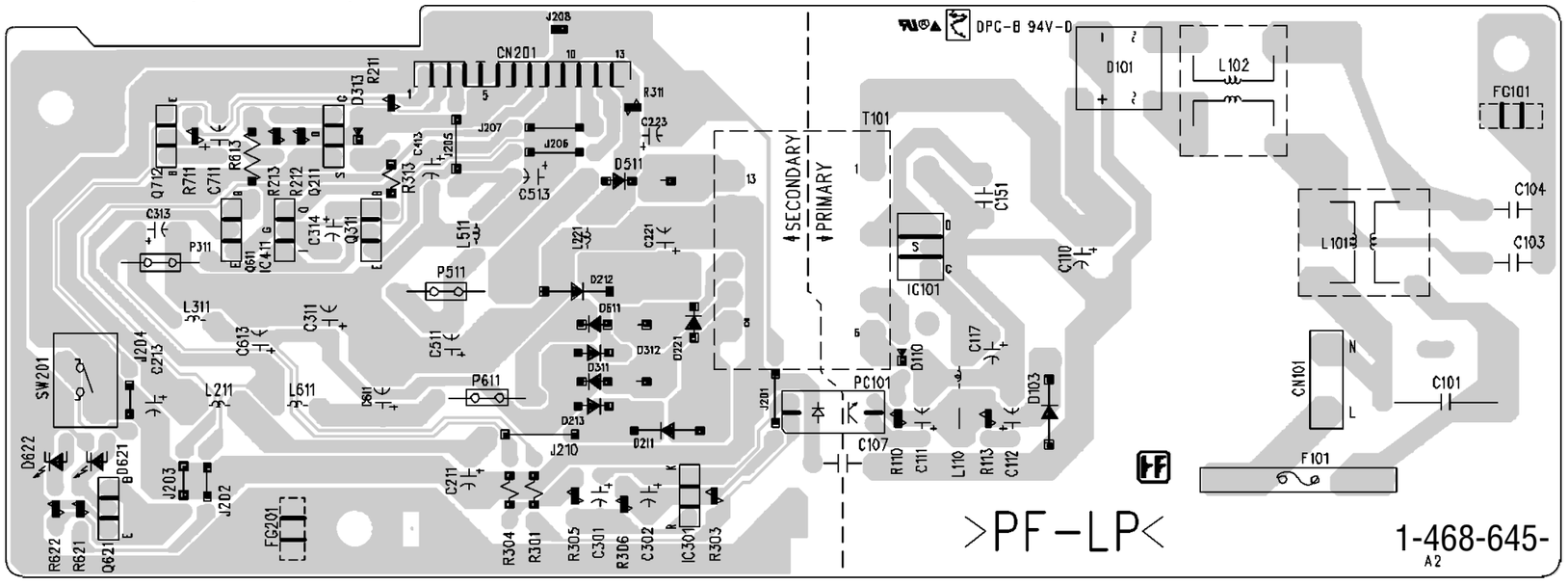
CNJ902 21P

JL917	21	GND(E)
JL918	20	V_IN
JL919	19	V/Y_OUT
JL920	18	GND(E)
JL921	17	GND(E)
JL922	16	BLANKING_OUT
JL923	15	R/C_OUT
JL924	14	GND(E)
	13	GND(E)
	12	N.C.
JL925	11	G_OUT
	10	AVLINKO
	9	GND(E)
JL926	8	FUNCTION_SW_OUT
JL927	7	B_OUT
JL928	6	A(L)IN
	5	GND(E)
JL929	4	GND(A)
JL930	3	A(L)OUT
JL931	2	A(R)IN
JL932	1	A(R)OUT

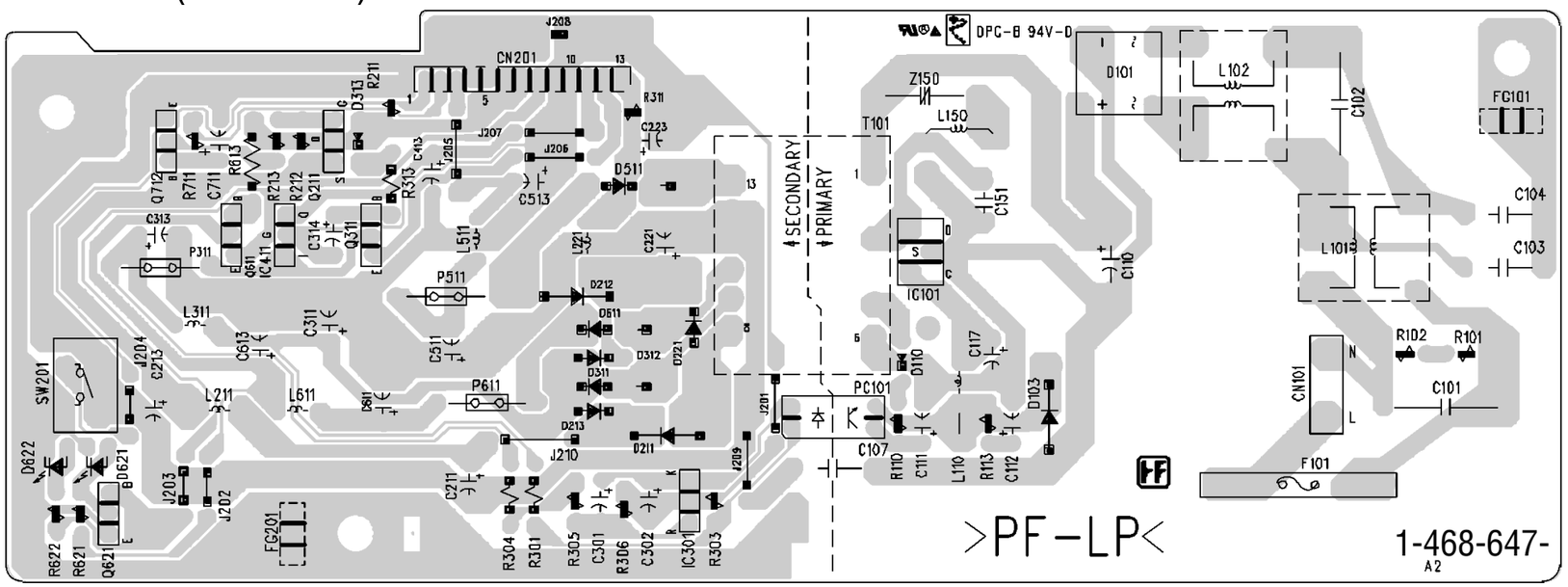
LINE(RGB)-TV

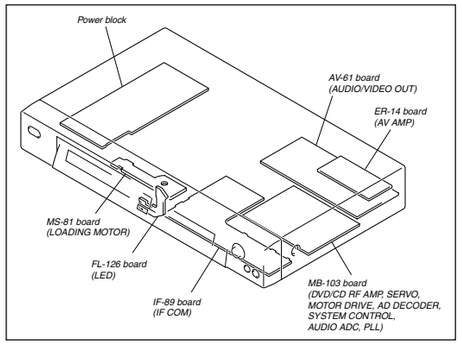
HS11S1, HS11S1F (SWITCHING REGULATOR) PRINTED WIRING BOARD

POWER BOARD (SW REG) (HS11S1)

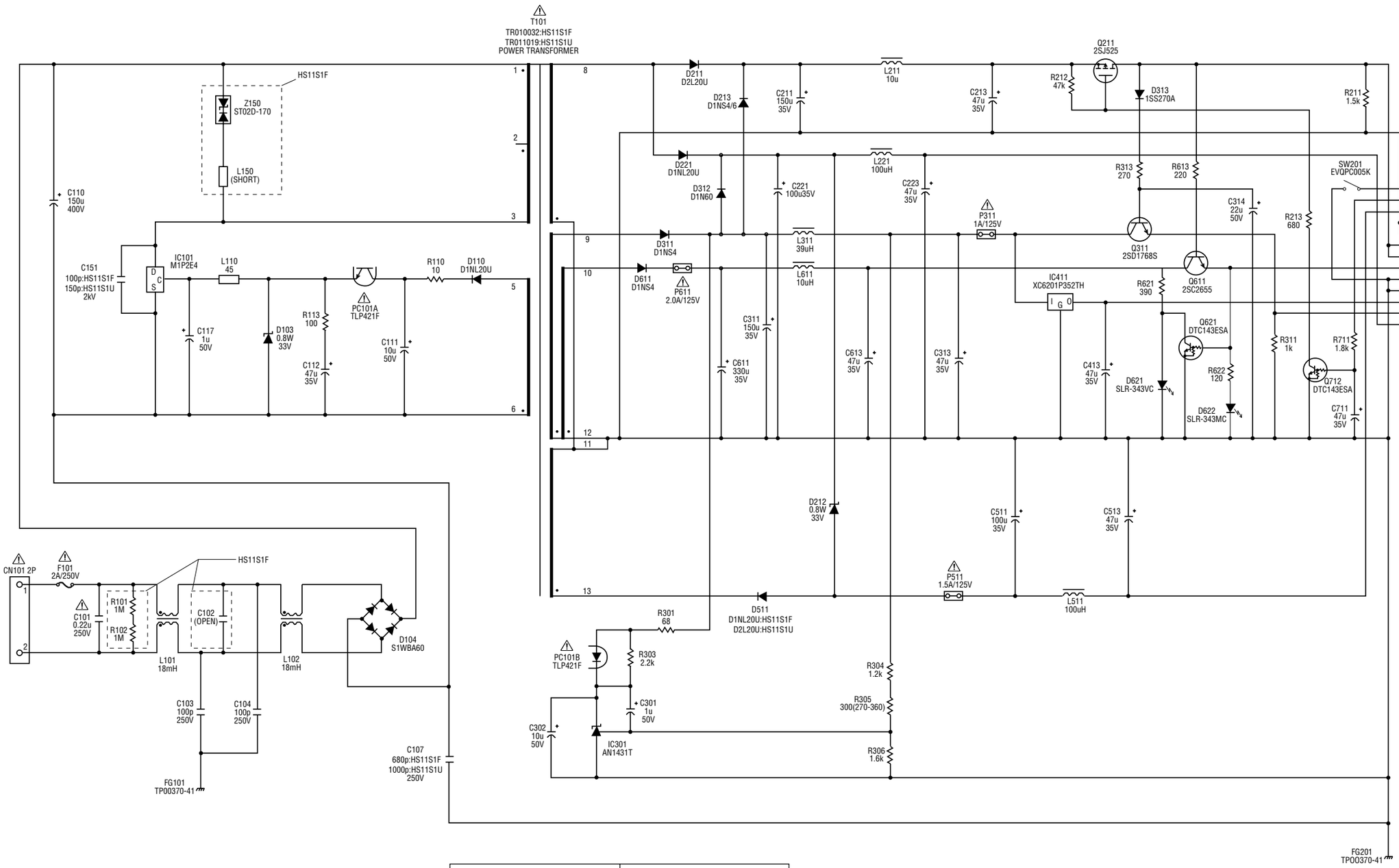


POWER BOARD (SW REG) (HS11S1F)




Power block
AV-61 board (AUDIO/VIDEO OUT)
ER-14 board (AV AMP)
MS-81 board (LOADING MOTOR)
FL-126 board (LED)
IF-89 board (IF COM)
MB-103 board (DVD/CD RF AMP, SERVO, MOTOR DRIVE, AD DECODER, SYSTEM CONTROL, AUDIO ADC, PLL)

SWITCHING REGULATOR



Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MEMO

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-103 BOARD IC104: MB91307RPFV-G-BND-E1)

Pin No.	Pin Name	I/O	Function
1-5	HA17-HA21	O	Address bus A17 to A21
6	HA22	–	Not used
7	WP	O	I2C EEPROM write protect
8	XSACS	–	Not used
9	AVCC	–	Power supply (+3.3 V)
10	AVRH	–	Reference power supply (+3.3 V)
11	AVSS	–	GND
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3 (fixed at “H”)
16	INT0	I	Interrupt input from AV DEC
17	INT1	I	Interrupt input from ARP
18	INT2	I	Interrupt input from SDSP
19	INT3	–	Not used
20	INT4	I	IF CON interrupt input
21	INT5	–	Not used
22	INT6	–	Not used
23	INT7	–	Not used
24	VCC	–	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	–	Not used
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial clock output
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DSENS	–	Not used
34	VSS	–	GND
35	XRST	O	System reset signal output
36	XARPRST	O	WIDE select signal output
37	RGBSEL	–	Not used
38	SDA	I/O	I2C data signal
39	SCL	O	I2C clock output
40	TRM	–	Not used
41	EUROV/Y	–	Not used
42	EXT/DSEL	–	Not used
43	MD0	I	Input of mode select 0 (fixed at “H”)
44	MD1	I	Input of mode select 1 (fixed at “L”)
45	MD2	I	Input of mode select 2 (fixed at “L”)
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	Input of DMA-REQ 1 from AV DEC
50	DACK1	O	Output of DMA-ACK 1 to AV DEC
51	XIFCS	O	Chip select signal to IF CON
52	VSS	–	GND
53	X1	O	Clock output (16.5 MHz)
54	X0	I	Clock input (16.5 MHz)

Pin No.	Pin Name	I/O	Function
55	VCC	–	Power supply (+3.3 V)
56	CKSW1	I	Chuck sensor input
57	OCSW1	I	Tray sensor input
58	CS0X	O	Chip select signal output (for external ROM)
59	CS1X	–	Not used
60	CS2X	O	Chip select signal output (for AV DEC)
61	CS3X	O	Chip select signal output (for AV DEC)
62	CS4X	O	Chip select signal output (for ARP)
63	CS5X	O	Chip select signal output (for SERVO DSP)
64	VCCI	–	Power supply (+1.8 V)
65	CS6X	–	Not used
66	CX7X	–	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at “H”)
69	BRQ	I	Test terminal (fixed at “L”)
70	XRD	O	Read timing signal output
71	XWRH	O	High order byte write timing signal output
72	XWRL	–	Not used
73	NMIX	I	Fixed at “H”
74	VCCI	–	Power supply (+1.8 V)
75	VSS	–	GND
76	XFRRST	I	Reset signal input from IF CON
77	CPUCK	O	CPU clock signal output
78	OCSW2	–	Not used
79	XDACS	O	Chip select signal output to DAC (2 CH)
80	TRMÅl	–	Not used
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	LD mute signal output
83	MAMUTE	O	Audio mute signal output
84	SRAMWE	–	Not used
85Å[92	HD0-HD7	I/O	Data bus D0 to D7 (16 bits only)
93-100	HD8-HD15	I/O	Data bus D8 to D15 (16 bits) and D0 - D7 (8 bits)
101	VSS	–	GND
102-109	HA0-HA7	O	Address bus A00 to A07
110	VCC	–	Power supply (+3.3 V)
110-118	HA8-HA15	O	Address bus A08 to A15
119	VSS	–	GND
120	HA16	O	Address bus A16

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the [TITLE], [CLEAR], [POWER] keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off. To execute each function, select the desired menu and press its number on the remote commander. To exit from the Test Mode, press the [POWER] key.

```
          Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emargency Hisory
5. Version Information
6. Video Level Adjustment
                  Exit: Power Key
_
Model     : DPX-6xxxx
Revision : x.xxx    Last Off: xx
```

Power Off Information Code List

00: Primary Power Off
01: Power Off Request from SYSTEM CONTROL
02: Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
03: IF CON Judged that SYSTEM CONTROL is Faulty
04: Power Off from Diagnosis Mode of IF CON
05: Forced Power Off by the User
06: Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander. On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
                  Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. (Quit)

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. (All items continuous check)

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

         Diag All Check
          No. 2 Version

 2-3. ROM Check Sum
Check Sum = 2005



Press NEXT Key to Continue
Press PREV key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [▶▶|] key to go to the next item, or [|◀◀] key to repeat the same check again.

To quit the diagnosis and return to the Check Menu screen, press ■ or ENTER key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###


 3-2. EEPROM Check
Error 03: EEPROM  Write/Read N
Address       : 00000001
Write Data    : 2492
Read   Data   : 2490
Press NEXT Key to Continue
Press PREV key to Repeat
_
```

Press ■ key to quit the diagnosis, or ⏮ key to repeat the same item where an error occurred, or ⏭ key to continue the check from the item next to faulty item.

Selecting 2 and subsequent items call the submenu screen of each item. When "———" is displayed in the submenu, it means that the test is not supported in the model.

For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. (Quit)

Quit the submenu and return to the main menu.

1. (All submenu items continuous check.)

This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.
Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
8-bit data are added up to the ROM address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

(2-6) M't Check
Mount resistance is checked.
Error 22: The region code does not accord.
Check whether the region code that is deduced from model resistance and destination resistance accords with the region code that is deduced from region resistance value.

3. Peripheral

(3-2) EEPROM Check
Data write ⟶ read, and accord check
Error 03: EEPROM write/read discord
0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-3) Gate Array Check (Machine only in which Gate Array is installed)
Data write ⟶ read, and accord check
Error 02: Gate array write/read discord
Data of 0x00 to 0xFF is written sequentially to the address 0xF and then read for checking.

(3-4) HAND FLASH Check (HAND Flash installed model only)
Data clear ⟶ write ⟶ read, and accord check
Error 04: Clear error
05: Write error
06: Read data discord
21: Number of defective block exceeds 10.
Clear 0th block of flash memory and write. Then read for checking.
When defective block exists, the address is displayed.
When the number of defective block exceeds 10, it is error.

(3-5) SACD Check (SACD Decoder installed model only)
Device reset ⟶ Built-in RAM check
Error 50: Write/read data discord

(3-6) Venc Check (Progressive support model only)
Data write ⟶ read, and accord check
Error: 52: Write/read data discord
Error may occur due to defect of access with syscon.

(3-7) ———— (Not supported)

(3-8) External RAM Check (External RAM installed model only)
Test data write ⟶ read, and accord check
Error
Check the external RAM used in syscon.

4. Servo

(4-2) Servo DSP Check
Data write ⟶ read, and accord check
Error 12: Read data discord
0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking.

(4-3) ————
Check no support.

(4-4) RF Amp Register Check
Data write ⟶ read, and accord check
Error xx: RF Amp register write, and read data discord
Implement 8-bit shift operation of the xx to the readable/writable register of the RF Amp. If once write data do not accord with read data, it is NG.

5. Data Supply System

(5-2) ARP Register Check
Data write ⟶ read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus
Data write ⟶ read, and accord check
Error 09: ARP ⟷ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write ⟶ other address read discord check
Error 10: ARP ⟷ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.
If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###




 5-4.ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address       : 0000A55A
Write Data    : 00000000
Read Data     : 00080000
Press NEXT Key to Continue
Press PREV key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write ⟶ read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1935 RAM
Data write ⟶ read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC107) are copied to all areas of RAM (IC504, IC505) connected to the AVD through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.
During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1935 SP
ROM ⟶ AVD RAM ⟶ Video OUT
Error: Not detected.
The data including sub picture streams in ROM are transferred to the RAM in AVD, and output as video signals from the AVD.
Though OSD display becomes blank, the output of video signals continues until the key is pressed.

7. Video Output

(7-2) Color Bar
AVD color bar command write ⟶ Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.

(7-3) Composite Out (European model only)
EURO-AV video output check
AVD color bar command write ⟶ Video (EURO-AV) OUT
Error: Not detected.
With the component of video output turned off, the color bar signals are output from the EURO-AV terminal.
This check is performed for European model only.

(7-4) Y/C Out (European model only)
Y/C video output check
AVD color bar command write ⟶ Video (Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output.
This check is performed for European model only.

(7-5) RGB Out (European model only)
RGB video output check
AVD color bar command write ⟶ Video (RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output.
This check is performed for European model only.

(7-6) Component Out (European model only)
Component video output check
AVD color bar command write ⟶ Video (Component) OUT
Error: Not detected.
With the component of video output turned on, the color bar signals are output.
This check is performed for European model only.

(7-7) Euro AV Through (European model only)
AV Through output On/Off
Error: Not detected.
AV Through output is turned on.
This check is performed for European model only.

8. Audio Output

(8-2) ARP ⟶1935
Data flow from supply system DRAM to SDRAM of AV Decoder is tested.
Error 14: ARP ⟶ 1935 video NG
15: ARP ⟶ 1935 audio NG

(8-3) Test Tone
Pink noise output
Error: Not detected.
In the models without DD output, the test tone is output from L and R of 2-channel only, and in the models with DD output, the test tone is output from L and R of 2-channel, and all channels of 5.1 output.
After turning on all outputs, each time the NEXT key is pressed, the output channel is switched for individual channel checking.

Diagnosis Check Items List

2. Version Display
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region
(2-6) M't Check

3. Peripheral
(3-2) EEPROM Check
(3-3) Gate Array Check
(3-4) NAND FLASH Check (NAND Flash installed model only)
(3-5) SACD Check (SACD decoder installed model only)
(3-6) Venc Check (Video encoder installed model only)
(3-7) ———— (Function not supported)
(3-8) External RAM Check (External RAM installed model only)

4. Servo
(4-2) Servo DSP Check
(4-3) ———— (Function not supported)
(4-4) RF Amp Register Check

5. Data Supply System
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6. AV Decoder
(6-2) 1935 RAM
(6-3) 1935 SP

7. Video Output
(7-2) Color Bar
(7-3) Composite Out (European model only)
(7-4) Y/C Out (European model only)
(7-5) RGB Out (European model only)
(7-6) Component Out (European model only)
(7-7) Euro AV Through (European model only)

8. Audio Output
(8-2) ARP ⟶1935
(8-3) Test Tone

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
07: 2725 read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: RF Amp NG
14: 1935 SDRAM NG
15: ARP →1935 video NG
16: ARP →1935 audio NG
19: 1910 UCODE download NG
1A: System call error (Function not supported)
1B: System call error (Parameter error)
1C: System call error (Illegal ID number)
20: System call error (Time out)
21: NAND Flash faulty blocks exceed 10
22: Resistor installation error
50: SACD Decoder W/R NG
52: Video Encoder W/R NG
55: External RAM W/R NG
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD


                      Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, and DVD (dual layer) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select [0] and press the [ENTER] key. First, the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, [1] DVD-SL disc, [2] CD disc, and [3] DVD-DL disc are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. You can exit the adjustment by pressing the [■] button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD Single Layer Disc

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 1 is used in the changer type model. If there is no disc on the table No. 1, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the SL disc is set on the table 1.

DVD Single Layer Disc Adjustment Steps

1. SLED Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Ld ON
6. Focus Error Check
7. Focus ON 0 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Tracking Gain Adjust
20. RF Level Measure
21. Jitter measure
22. Eep Copy Loop Filter Offset
23. All Servo Stop

2. CD Disc

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 2 is used in the changer type model. If there is no disc on the table No. 2, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the CD is set on the table 2.

CD Adjustment Steps

1. Sled Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 1 with PI Level measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter measure
23. All Servo Stop

3. DVD Dual Layer Disc

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. The table No. 3 is used in the changer type model. If there is no disc on the table No. 3, the tray will be open to wait for closing. If there is a disc on the table, the adjustment starts immediately. If you put a disc prior to adjustment, confirm that the DL disc is set on the table 3.

DVD Dual Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL
   DVD DL Layer 1 Adjust
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level measure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter measure
    DVD DL Layer 0 Adjust
17. Focus Jump (L1 → L0)
18. Auto Track Offset Adjust L0
19. Tracking ON
20. Clva ON
21. Sled ON
22. Auto Focus Balance Adjust
23. Auto Focus Gain Adjust L0
24. Auto Focus Balance Adjust
25. Eq Boost Adjust L0
26. Auto Track Gain Adjust L0
27. Jitter measure
28. All Servo Stop

4. LCD

LCD disc is not adjusted because the adjusted data of CD are reflected, and SACD (hybrid disc) is not adjusted because the adjusted data of CD and DVD-DL are reflected.

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
   ## Drive Manual Operation ##

          Operation Menu
1. Disc Type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                       Exit: RETURN
```

In using the Manual Operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type setting screen.
   The Disc Type setting must be performed after a disc was loaded.
   The set Disc Type is cleared when the tray is opened.
2. After power ON, if the Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [■] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER] : Power OFF
[■] : Servo stop
[⏏] (Open/Close) : Stop+Eject/Loading
[↩] : Return to Operation Menu or Test Mode Menu
[▶▶|], [|◀◀] : Transition between sub modes of menu
[1] to [9], [0] : Selection of menu and items
Cursor [↑]/[↓] : Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
            Disc Check


1. SL Disc Check
2. CD Disc Check
3. DL Disc Check



0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.
The adjustment must be executed more than once after default data were written.
From this screen, you can go to another mode by pressing [▶▶|] or [|◀◀] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL     12cm
3. DVD DL     12cm
4. CD         12cm
5. SACD       12cm
6. DVD SL     8cm
7. DVD DL     8cm
8. CD         8cm
9. LCD        8cm
0. Reset SLED TILT
                              EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL     12cm
3. DVD DL     12cm
4. CD         12cm
5. SACD       12cm
6. DVD SL     8cm
7. DVD DL     8cm
8. CD         8cm
9. LCD        8cm
0. Reset SLED TILT
            SA.———— SI.— EMG.00
DVD SL 12cm
```

Display when DVD SL 12cm disc was selected

```
            Disc Type
1. Disc Type Auto Check
2. DVD SL     12cm
3. DVD DL     12cm
4. CD         12cm
5. SACD       12cm
6. DVD SL     8cm
7. DVD DL     8cm
8. CD         8cm
9. LCD        8cm
0. Reset SLED TILT
              TC. —:—:— EMG.00
CD      12cm
```

Display when CD 12cm disc was selected

[0] Reset SLED TILT: Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)

[1] Disc Type Check: Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).

[2] to [9]: Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
          Servo Control
1. LD         Off   R. Sled FWD
2. SP         Off   L. Sled REV
3. Focus      Off
4. TRK.       Off
5. Sled       Off
6. CLVA       Off
7. FCS. Srch  Off


0. Reset SLED TILT
            SA.———— SI.— EMG.00
DVD SL 12cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

[0] Reset SLED TILT: Reset the Sled and Tilt to initial position. (Reset the Sled only to initial position because the Tilt mechanism is not available in this model.)

[1] LD: Turn ON/OFF the laser.

[2] SP: Turn ON/OFF the spindle.

[3] Focus: Search the focus and turn on the focus.

[4] TRK.: Turn ON/OFF the tracking servo.

[5] Sled: Turn ON/OFF the sled servo. When PLL is not locked (cannot be locked), the sled servo is not turned ON. The display keeps ON.)

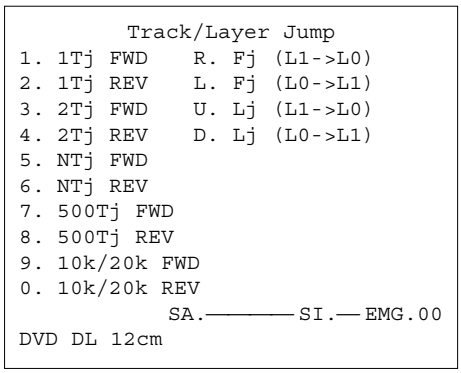
[6] CLVA: Turn ON/OFF normal servo of spindle servo.

[7] FCS. Srch: Apply same voltage as that of focus search to the focus drive to check the focus drive system.

[→] Sled FWD: Move the sled outward. Perform this operation with the tracking servo turned off.

[←] Sled REV: Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump



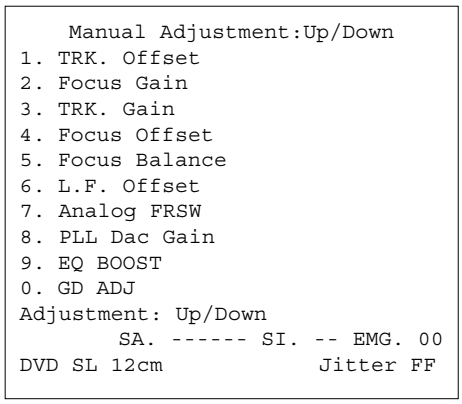
On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

[1] 1Tj FWD: 1-track jump forward.
[2] 1Tj REV: 1-track jump reverse.
[3] 2Tj FWD: 2-track jump forward.
[4] 2Tj REV: 2-track jump reverse.
[5] NTj FWD: N-track jump forward.
[6] NTj REV: N-track jump reverse.
[7] 500Tj FWD: Fine search forward.
[8] 500Tj REV: Fine search reverse.
[9] 10k/20k FWD: Direct search forward.
[0] 10k/20k REV: Direct search reverse.

– The following commands are valid for DVD-DL disc only –

[→] (L1 → L0): Focus jump (Trk/Sled Servo OFF) forward.
[←] (L0 → L1): Focus jump (Trk/Sled Servo OFF) reverse.
[↑] (L1 → L0): Layer jump (Trk/Sled Servo ON) forward.
[↓] (L0 → L1): Layer jump (Trk/Sled Servo ON) reverse.

4. Manual Adjustment



On this screen, each item can be adjusted manually. Select the desired number [1] to [0] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

[1] TRK. Offset: Adjusts tracking offset.
[2] Focus Gain: Adjusts focus gain.
[3] TRK. Gain: Adjusts track gain.
[4] Focus Offset: Adjusts focus offset.
[5] Focus Balance: Adjusts focus balance.
[6] L.F. Offset: Adjusts loop filter offset.
[7] Analog FRSW: Sets select switch of analog feedback circuit.
[8] PLL Dac Gain: Adjusts D/A converter gain of PLL.
[9] EQ BOOST: Adjusts boost amount of equalizer.
[0] GD ADJ: Adjusts group delay amount.

5. Auto Adjustment

```
         Auto Adjustment
1. Auto TRK. Offset
2. Auto Focus Balance
3. Auto Focus Offset
4. Auto Focus Gain
5. Auto TRK. Gain
6. Auto EQ.
7. Auto L.F. Offset
8. Auto Group Delay

          SA.04EF905 SI.00 EMG.00
DVD SL 12cm
```

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

[1] Auto TRK. Offset: Adjusts tracking offset.
[2] Auto Focus Balance: Adjusts focus balance.
[3] Auto Focus Offset: Adjusts focus offset.
[4] Auto Focus Gain: Adjusts focus gain.
[5] Auto TRK. Gain: Adjusts track gain.
[6] Auto EQ
[7] Auto L.F. Offset: Adjusts loop filter offset.
[8] Auto Group Delay

6. Memory Check

The display image is shown below and three screens in total can be selected.

```
EEPROM DATA 1          —DL —
              CD  LCD SL  L0  L1
Focus Gain    xx  xx  xx  xx  xx
TRK. Gain     xx  xx  xx  xx  xx
FCS Balnce    xx  xx  xx  xx  xx
Focus Bias    xx  xx  xx  xx  xx
TRV Offset    xx  xx  xx  xx  xx
L.F. Offset   xx  xx  xx  xx  xx
EQ. Boost     xx  xx  xx  xx  xx
_
UP    : Last Data
DOWN  : Next Data
CLEAR : Default Set       page.1/3
```

```
EEPROM DATA 2          —DL —
              CD  LCD SL  L0  L1
RF Jitter     xx  --  xx  xx  xx
RF Level      xx  --  xx  --  --
FE Level      xx  --  xx  --  --
FE Balance    xx  --  xx  --  --
TRV.Level     xx  --  xx  --  --
TE Gain       xx  xx  --  --  --
PI Level      xx  --  xx  xx  --
_
UP    : PREV Data
DOWN  : Next Data
CLEAR : Default Set       page.2/3
```

```
EEPROM DATA 3          —DL —
              CD  LCD SL    L0  L1
Analog FRSW   xx  xx  xx    xx  xx
PLL Dac Gain  xx  xx  xx    xx  xx
Mirror Time   xx  xx  xx    xx  xx

_  THR A&L    xx  xx  xx/xx xx  xx
UP    : PREV Data
DOWN  : First Data
CLEAR : Default Set       page.3/3
```

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the [CLEAR] key, but be careful that they are not recoverable after initialization.
Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.
"THR A&L" data on the second page cannot be changed if default setting is once made.

6-6. MECHA AGING

```
       ### Mecha Aging ###



Press OPEN key



Abort : STOP key
```

On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [▷] key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the number of the repeat cycle is displayed. Aging can be aborted at any time by pressing the [■] key. After the operation has stopped, unload the disc and press again the [■] key or the [⏏] key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
       ### EMG. History ###

Laser Hours   CD   xxhxxm
              DVD  xxhxxm

 1.  00 00 00 00   00 00 00 00
     00 00 00 00   00 00 00 00

 2.  00 00 00 00   00 00 00 00
     00 00 00 00   00 00 00 00

Select : 1-9      Scroll :UP/DOWN
(1: Last EMG.)    Exit   :RETURN
```

On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last "1" up to "10" can be scrolled with [↑] key or [↓] key. Also, specific information can be displayed by directly entering that number with the ten-key pad from [1] to [9].
(Emergency history code is shown separately.)
The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

◎ Clearing laser hours
Press [DISPLAY] and [CLEAR] keys in this order.
Both CD and DVD data are cleared.

◎ Clearing emergency history
Press [TITLE] and [CLEAR] keys in this order.

◎ Initializing setup data
Press [DVD menu] and [CLEAR] keys in this order.
The data have been initialized when "Set Up Initialized" message is displayed.
The EMG. History display screen will be restored soon.

6-8. VERSION INFORMATION

```
   ### Version Infomation ###

IF con.       Ver.x.xxx(xxxx)
              Group   xx

SYScon.       Ver.x.xxx(xxxx)
              Model   xx
              Region  0x

 Servo DSP Ver:x.xxx
 AVD ucode Ver:xxxxxxxx
 OPT TYPE : x LASER
Exit : RETURN
```

The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu. The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

∗ Note after Downloading
After downloading ROM data, sometimes it happens that checksum is not the same as that of ROM data that has been downloaded. In such a case, go back to the menu screen and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Download error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-89 BOARD (IF CON) TEST MODE

The IF-89 board (IF CON) test mode is the IF CON self-diagnosis mode. The IF CON can diagnose the functions of the IF-89 board that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
   Grid check
   Anode check
6. LED control function

In the test mode, the main unit operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (PCONT) of MB-103 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The main unit is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube.
   (Normally, display is made following the commands from SYSTEM CONTROL)
4. LED control.
   (Normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

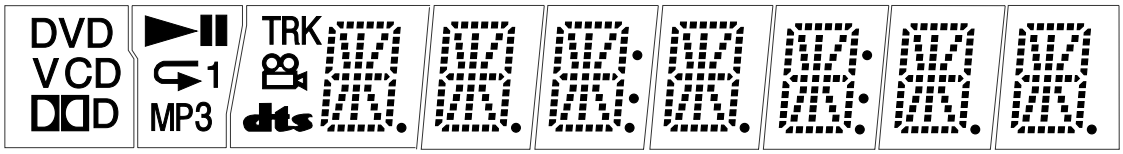
2-1. Self Check Mode Transition Processing

At the AC Power ON after reset of IF CON is released with the MB-103 board are not connected to the AV-61 board, or while pressing the [■] key on the main unit with the IF CON in STANDBY mode, enter [RETURN] → [DISPLAY] (or [SET UP]) on the remote commander, and the main unit transits to the Self Check Mode.

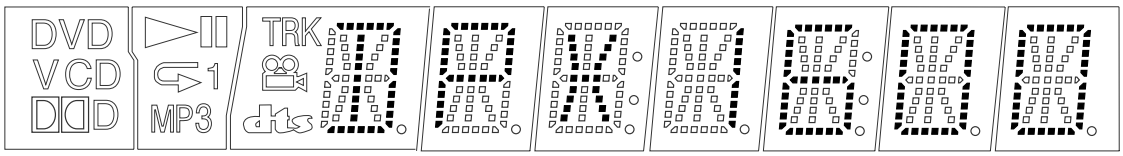
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

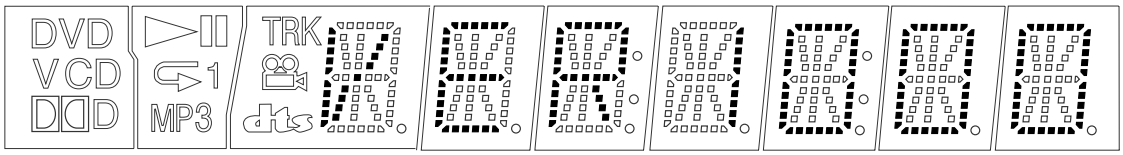
(1) FLD and LED all ON (for 5 seconds)



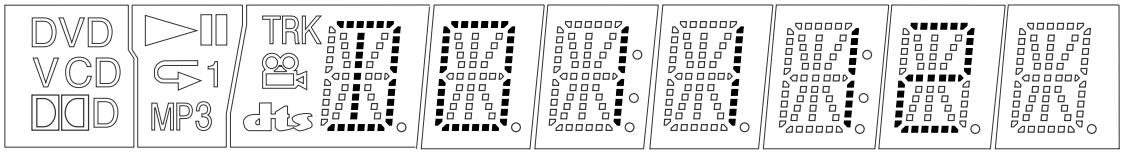
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)			
	Pin ㉝ (BNRKEY)	Pin ㉞ (PLAY)	Pin ㉟ (O/C)	Pin ㊱ (TVS)
0 – 0.2	–	PLAY	OPEN/CLOSE	TVS
0.6 – 0.82	–	NEXT	–	PIC MODE
1.16 – 1.47	–	PREVIOUS	–	MODE
1.8 – 2.12	–	PAUSE	–	–
2.48 – 2.7	–	STOP	–	–

2-3-1. FLD and LED All ON

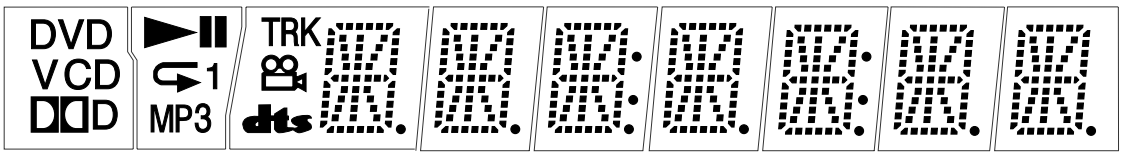
2-3-1-1. Transition Keys in Self Check Mode

- [■] key and [⏏] key on the main unit
- [←] key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.

• Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

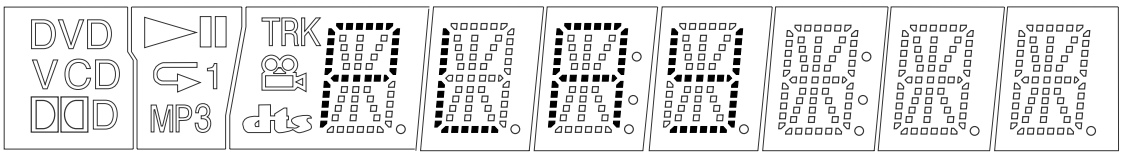
2-3-2-1. Transition Keys in Self Check Mode

• Keys on the main unit except keys transited in Self Check Mode

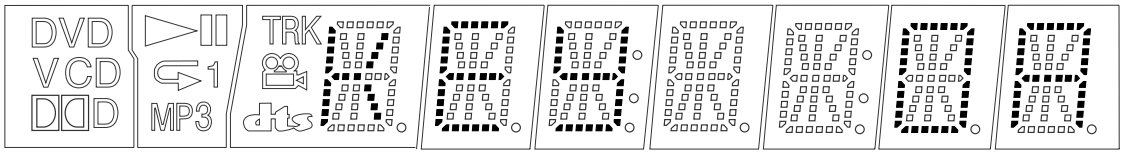
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

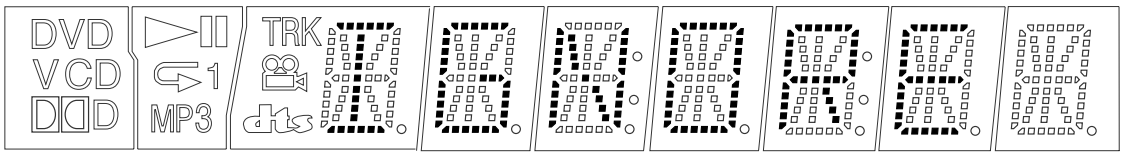
• FLD display (at input of [▷] key on the main unit)



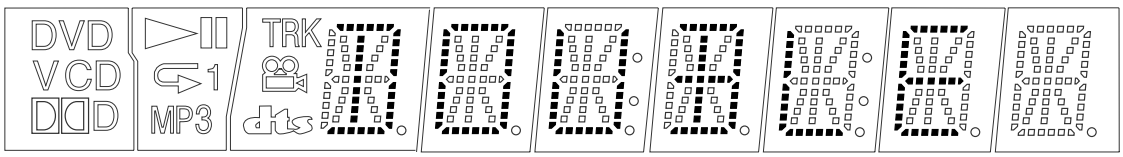
• Key code display
(at input of [▷] key, key code: 0 Ah)



• At input of faulty voltage



• When key is pressed double



2-3-3. Remote Commander Key Name Display and Key Code Display

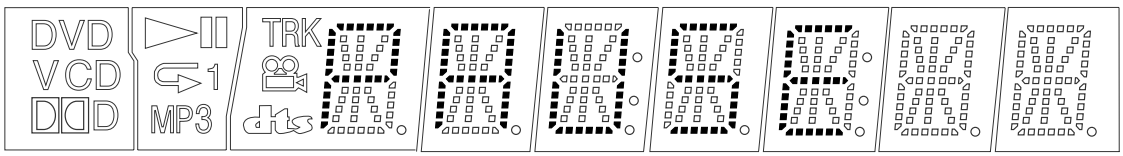
2-3-3-1. Transition Keys in Self Check Mode

• Remote commander keys except keys transited in Self Check Mode

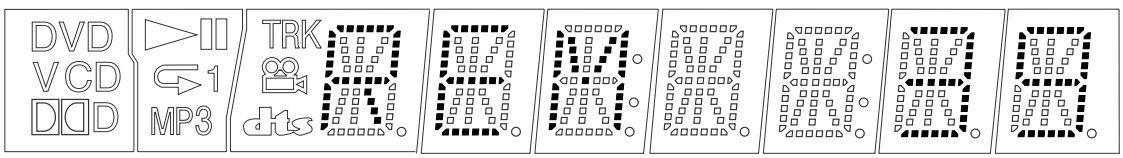
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check Mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

• Remote commander key name display (at input of [❚❚] key)



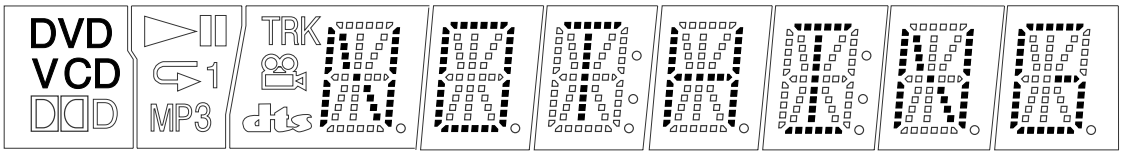
• Remote commander key code display
(at input of [❚❚] key, key code: 39 h)



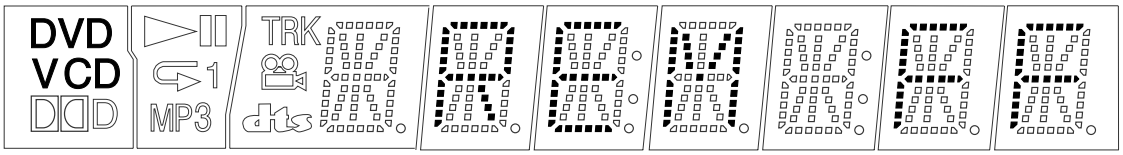
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

• Communication error display
(at no input of key and remote commander)



• Communication error display
(at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

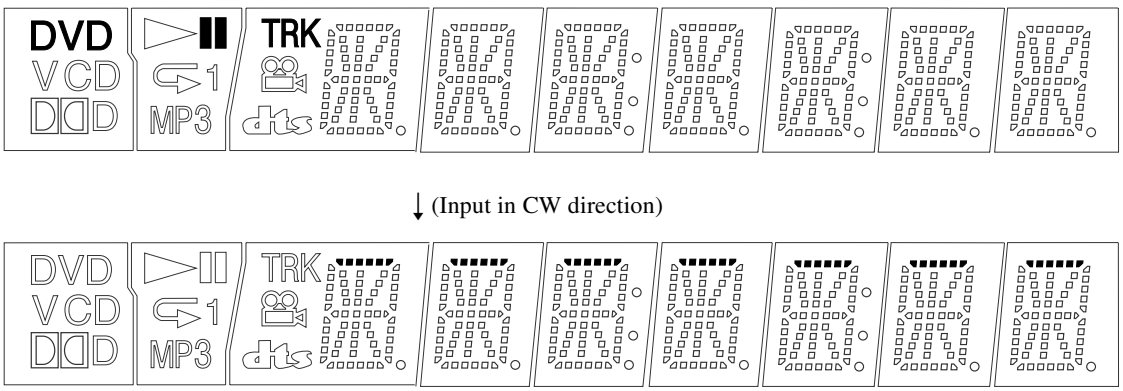
2-3-5-1. Transition Keys in Self Check Mode

- ⇥ key on the remote commander
- SHUTTLE on the remote commander during Anode Test display (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-5-2. Operation and Display

The Self Check Mode transits to this mode when ⇥ key is entered. This tests whether each segment turns on individually. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 – 2 – 3 direction, or counterclockwise it switches in 3 – 2 – 1 direction.

• Display at the start of Anode Test



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

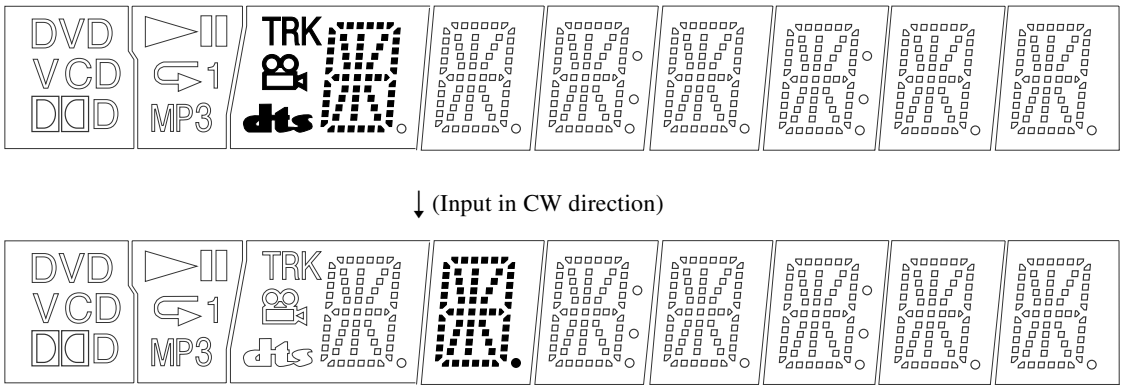
2-3-6-1. Transition Keys in Self Check Mode

- [↑] key on the remote commander
- SHUTTLE on the remote commander during Grid Test display
  (This unit does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-6-2. Operation and Display

The Self Check Mode transits to this mode when [↑] key is entered. This tests whether each grid turns on individually. The first grid only of FLD turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 – 2 – 3 direction, or counterclockwise it switches in 3 – 2 – 1 direction.

• Display at the start of Grid Test



2-3-7. LED Test Display

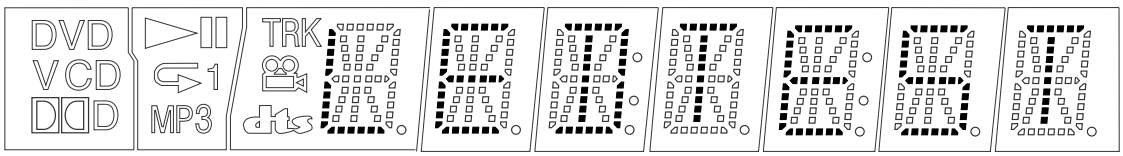
2-3-7-1. Transition Keys in Self Check Mode

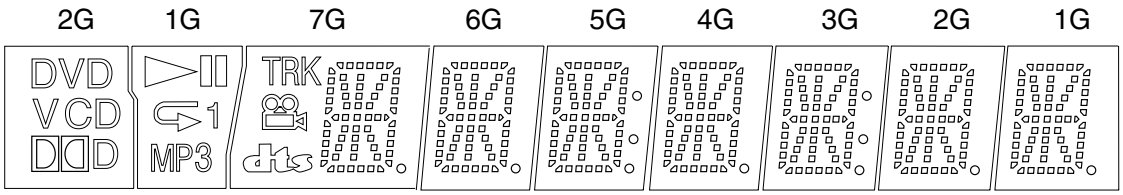
- [↓] key on the remote commander
- SHUTTLE on the remote commander during Grid Test display
  (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

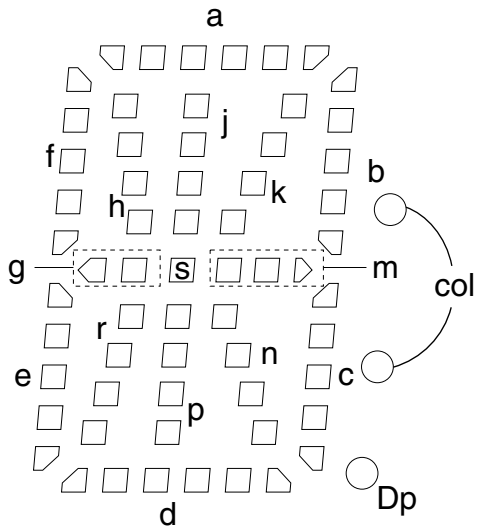
2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE on the remote commander. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

• FLD display during LED Test







(7G-1G)

ANODE CONNECTION

	7G	6G	5G	4G	3G	2G	1G
P1	TRK		col		col	DVD	II
P2	a	a	a	a	a	a	a
P3	h	h	h	h	h	h	h
P4	j	j	j	j	j	j	j
P5	k	k	k	k	k	k	k
P6	b	b	b	b	b	b	b
P7	f	f	f	f	f	f	f
P8	m	m	m	m	m	m	m
P9	s	s	s	s	s	s	s
P10	g	g	g	g	g	g	g
P11	e	e	e	e	e	e	e
P12	n	n	n	n	n	n	n
P13	p	p	p	p	p	p	p
P14	r	r	r	r	r	r	r
P15	c	c	c	c	c	c	c
P16	d	d	d	d	d	d	d
P17	dts					DDD	MP3
P18						V	⇆
P19						CD	1
P20	Dp	Dp	Dp	Dp	Dp	Dp	▷

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-103 board and AV-61 board, and with the SELF CHECK (pin ⑩) of IF CON (IC404) on the IF-89 board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-103 board)

1. The test mode menu is not displayed.

1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.
Check that outside appearance of the ICs is normal.
Check that IC pins are not short-circuited.
Check that there is no soldering error.
Check that outside appearance of the capacitors and resistors is normal.

1-2. Power supply voltage check

Check the power voltage of the power connector (CN102).
Check the power voltage of SYSCON (IC104).
Check the power voltage of ROM (IC106 or IC107).
Check the power voltage of AVD (IC403).
Check the power voltage of ARP & SERVO (IC301).
If the power voltage has any abnormality →
Check that the power supply lines are not shorted.
Check that there is no soldering error.
If any abnormality cannot be found still →
Check that each IC is working normally.

1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.
If the 8.25 MHz signal appears. → Check the machine according to section 1-3-1
If the 33 MHz signal appears. → Check the machine according to section 1-3-2.
If other frequencies are output.
R110 and R113 have defective soldering, X101 crystal oscillator is defective.
If the measurement point is fixed to either "H" or "L". →
Observe XFRRST (pin-⑯) of SYSCON (IC104) with an oscilloscope.
If the measurement point is "L", check the following items.
If the IC has defective soldering, if the IC is short-circuited.
If the measurement point is "H",
→ Component X101 or SYSCON (IC104) is defective.

1-3-1. When the 8.25 MHz signal appears at CPUCK

• Check the XRD, XWRH and CS0X signal.
Observe XRD (pin-⑦⓪), XWRH (pin-⑦①), and CS0X (pin-⑤⑧) of SYSCON (IC104) with an oscilloscope.
If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.
Check if the signal line does not have the defective soldering.
Check if the signal line is short-circuited with other signal lines.
If you cannot find any problem → SYSCON (IC104) is defective.

• HA [0 to 21] signal and HD [0 to 15] signal check
Observe HA [0 to 21] (pins-⑩② to ⑩⑨, ⑪① to ⑪⑧, ⑫⓪, ① to ⑤) of SYSCON (IC104) and HD [0 to 15] (pins-⑧⑤ to ⑩⓪) with an oscilloscope.
If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings. (HD stays in the center voltage when it is normal.)
→ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

• Reset signal check
Check if XFRRST (pin-⑯) of SYSCON (IC104) normal or not.
The signal starts up at the same time as Vcc → Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

1-3-2. When the 33 MHz signal appears at CPUCK

• WAIT signal check

Observe XWAIT (pin-⑥⑦) of SYSCON (IC104) with an oscilloscope.

If it is fixed to "L" (0V). ⟶ Observe CS2X to CS5X (pins-⑥⓪ to ⑥③).

If CS2X or CS3X is "L". ⟶ AVD (IC403) has defective soldering or AVD is defective.

If CS4x or CS5X is "L". ⟶ ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not "L". ⟶ XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage ⟶ The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

• CSnX signal check

Observe CS0X to CS5X (pins-⑤⑧ to ⑥③) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or if to center voltage ⟶ Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)
CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

2. Test mode menu is displayed but the machine stops when menu is selected

2-1. AVD (IC403) check

Observe SDCLKO (pin-⑫⑦) of AVD (IC403) with an oscilloscope.

95 MHz ⟶ No problem

27 MHz ⟶ Observe the XRST, HA, HD, XRD, XWRH INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies ⟶ AVD (IC403) 27MHz signal line (CLKI (pin-⑮⑧), SCLKIN (pin-⑯⓪)) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

2-2. INT signal check

Observe INT0 to 2 (pins-⑯ to ⑱) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or fixed to the center voltage ⟶ Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)
INT1, INT2: ARP & SERVO (IC301)

2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. ⟶ IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

3. If the message "SDSP No Ack" appears after the menu is displayed.

3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-⑮⓪)

33 MHz ⟶ Normal

Frequency other than 33 MHz ⟶ CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-⑧⑦) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either "L" (0V) or "H" (3.3V).

If XRST if fixed to "L". XRST has the defective soldering, In all other cases. ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

4. If trouble occurs at the specific item of the "Diag All Check".

IC mount of the NG item is defective or IC is defective.

5. Picture and sound are not output.

Check connection of CN601

Check for the defective connection of flat cable and check of damage of the flat cable.

6. Picture is output but sound is not output.

Check the audio data output (at pins-㉔, ㉘, and ㉙) of AVD (IC403)

The audio data is not output. ⟶ AVD (IC403) or audio DAC (IC601) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC601) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. ⟶ The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

7. Sound is output but picture is not output.

Observe pins-⑤⑤, ⑤⑦, ⑤⑨, ⑥①, ⑥③ and ⑥⑤ of AVD (IC403) with an oscilloscope.

If the analog signal is not output. ⟶ The signal line has the defective soldering or is short-circuited or parts are defective or AVD (IC403) is defective.

6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-103 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

6-11-4. The product itself is defective.

• If MB103 does not have any problem,

The board other than MB-103 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

1. The red LED does not light when the AC power is turned on.

Check the EVER –13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage of the power supply block CN201.

If voltage is abnormal. ⟶ The power supply block is defective.

2. The LED does not light in green even once when the POWER button is pressed. It remains lighting in red (in the STANDBY mode).

2-1. Check the EVER -13V (pin-③), EVER+3.3V (pin-⑪), EVER+11V (pin-⑬) voltage at CN201 of the power supply block/

If voltage is abnormal. ⟶ The power supply block is defective.

2-2. Check if the fuse on the IF board has blown of not.

If the fuse has blown ⟶ Replace the fuse.

2-3. Check the P-CONT (pin-②) at CN401 of the IF-89 board when the POWER button is pressed.

If it remains at "L",

⟶ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the IF-89 board is defective, or connector installation is defective, or the power supply block is defective.

2-4. Check if the button is kept depressed in the IFCON self mode.

If the button is kept depressed. ⟶ The front panel is defective, or IF-89 board is defective.

2-5. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-89 board.

If it is 0.5 V or more. ⟶ The power supply is defective, or IF-89 board is defective.

3. If the LED lights in green but returns to red (STANDBY mode) in several seconds when the POWER button is pressed.

3-1. Check CN201 voltage of the power supply block when the LED lights in green.

If voltage is abnormal. ⟶ The power supply block is defective, or the IF-89 board is defective, or MB103 is defective

3-2. Check XFRRST (pin-⑧) at CN101 on the MB-103 board.

If it is fixed to "L". ⟶ The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

3-3. Check IFBSY (pin-⑤), XIFCS (pin-⑥), SI0 (pin-④), SO0 (pin-①) and SC0 (pin-③) at CN101

If they are fixed to "H" or "L".

⟶ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between "L/H".

Connector installation is defective, or the IF-89 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

3-4. Check PONCHK (pin-㉚) of IFCON (IC404) on the IF-89 board.

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. ⟶ The IF board is defective.

4. The LED lights in green but the fluorescent display tube does not light when the POWER button is pressed.

Connection between the power supply block and the IF-89 board is defective, or connector installation is defective, or the IF-89 board is defective.

5. Both picture and sound are not output.

Connection between the power supply block and the IF-89 board is defective, or connection between the IF-89 board and the AV-61 board is defective, or connection between the AV-61 board and the MB-103 board is defective, or connector installation is defective, or AV-61 board is defective.

6. Picture is not normal. (Block noise or others appear.)

The MB-103 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.

MEMO

SECTION 7
ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

This section describes procedures and instructions necessary for adjusting electrical circuits in this unit.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D126J)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer)
   HLX-503 (J-6090-069-A) (single layer)
   HLX-504 (J-6090-088-A) (single layer)
   HLX-505 (J-6090-089-A) (dual layer)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)
8) Extension Cable (J-6090-107-A)

7-1. POWER SUPPLY CHECK

1. SRV1246JUC Board

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201 pin ⑪
Specification	3.5 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN201 pin ⑧
Specification	3.3 ± 0.2 Vdc
+5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pins ⑥, ⑦
Specification	11.0 ± 1.0 Vdc
EVER +11 V Check	
Test point	CN201 pin ⑬
Specification	11.0 ± 1.0 Vdc
EVER –13 V Check	
Test point	CN201 pin ③
Specification	–13.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

Note
Because the heatsink installed on the power supply board is a part of the primary side, never touch it to avoid electrical shock.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-103 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or too small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	$1.0\ ^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV401 to attain $1.0^{+0.04}_{-0.02}$ Vp-p.

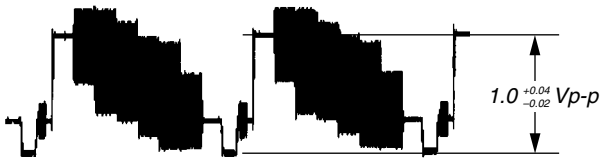


Fig.7-1.

2. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.05 Vp-p.

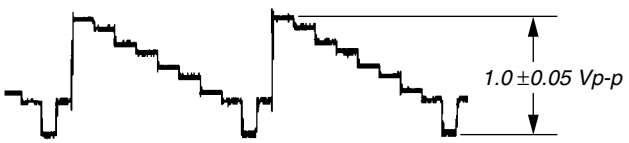


Fig. 7-2.

3. Checking S Video Output S-C

<Purpose>

This checks whether the S video output S-C satisfies the NTSC standard. If it is not correct, the colors will be too dark or too light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	286 ± 30 mVp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-C burst is 286 ± 30 mVp-p

Fig. 7-3.

4. Checking Component Video Output Y

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector, D1 VIDEO OUT connector, Pin ① (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.05 Vp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the Y level is 1.0 ± 0.05 Vp-p.

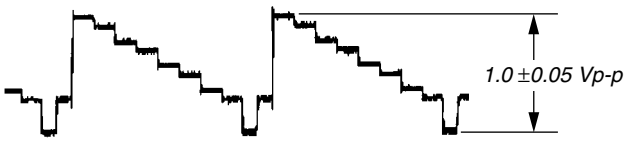


Fig. 7-4.

5. Checking Component Video Output B-Y

<Purpose>

This checks component video output B-Y. If it is incorrect, correct color will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (CB) connector, D1 VIDEO OUT connector, Pin ③ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

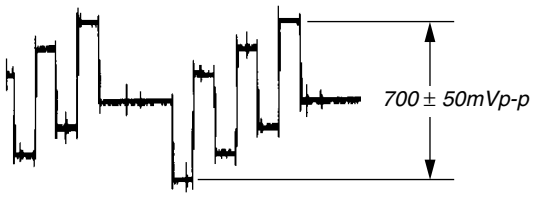


Fig. 7-5.

6. Checking Component Video Output R-Y

<Purpose>

This checks component video output R-Y. If it is incorrect, correct color will not be displayed when connected to, for instance, component input projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (CR) connector, D1 VIDEO OUT connector. Pin ⑤ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 50 mVp-p

Checking method:

1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

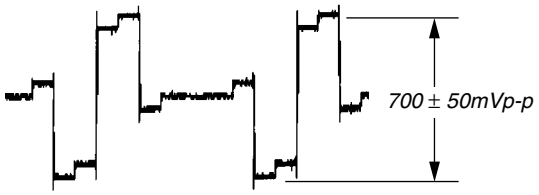
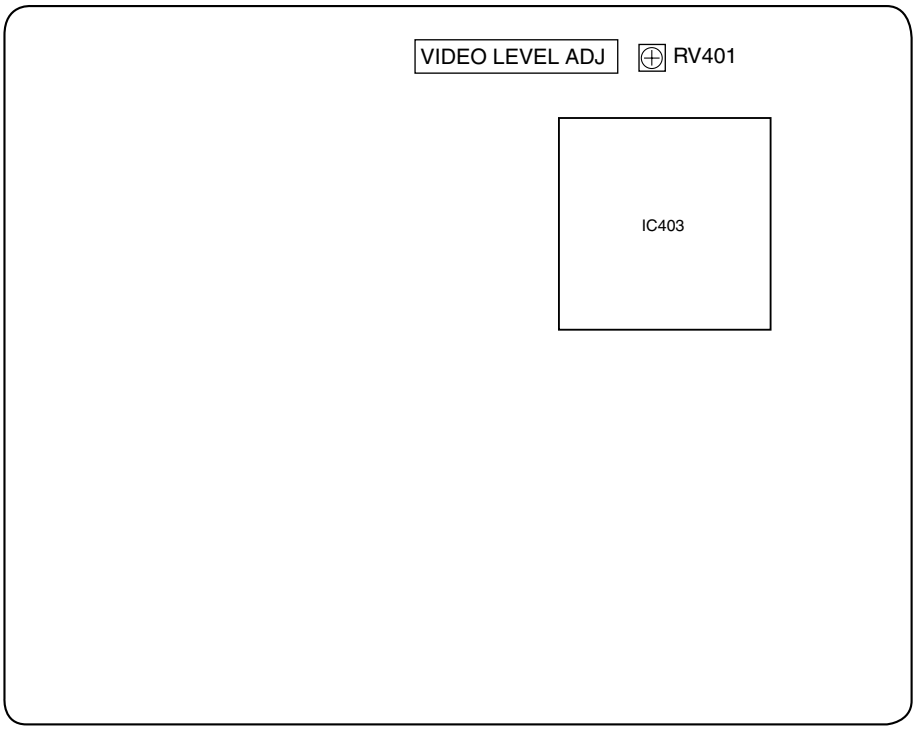


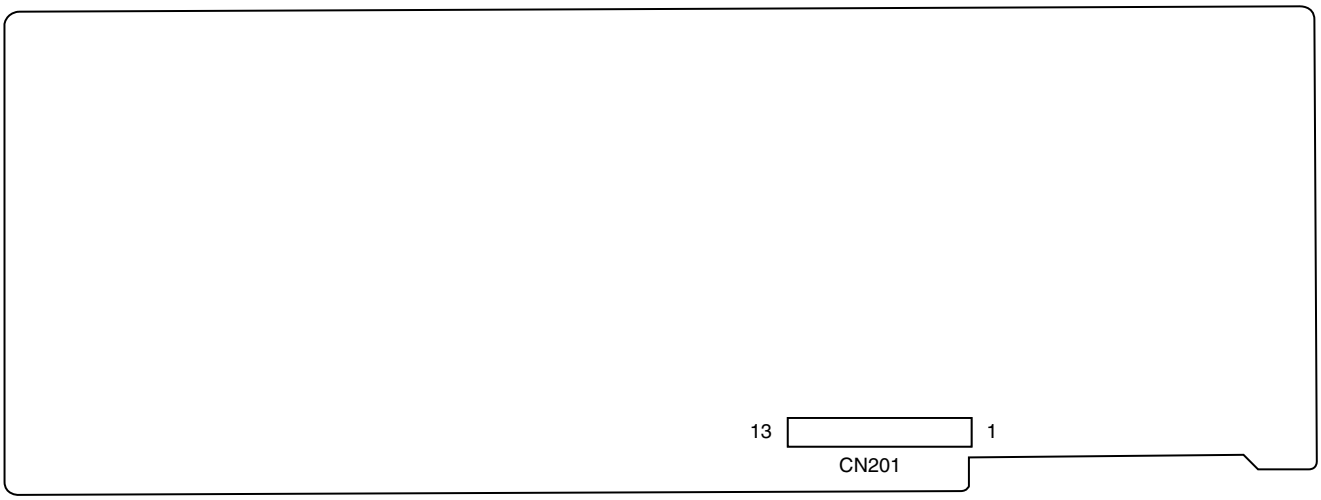
Fig. 7-6.

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-103 BOARD (Side A)



SRV1246JUC BOARD (Side A)



SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

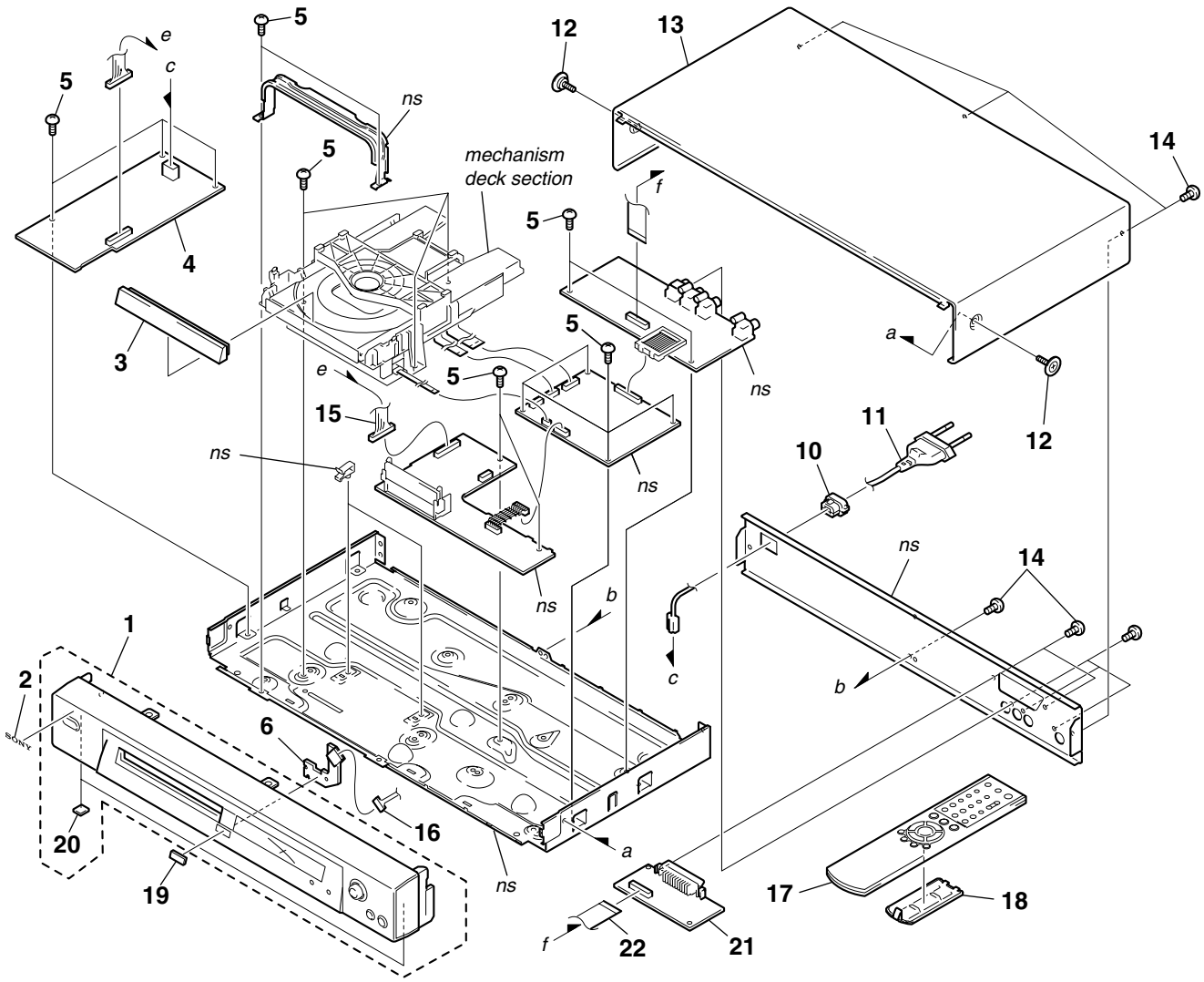
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. MAIN SECTION

ns : not supplied

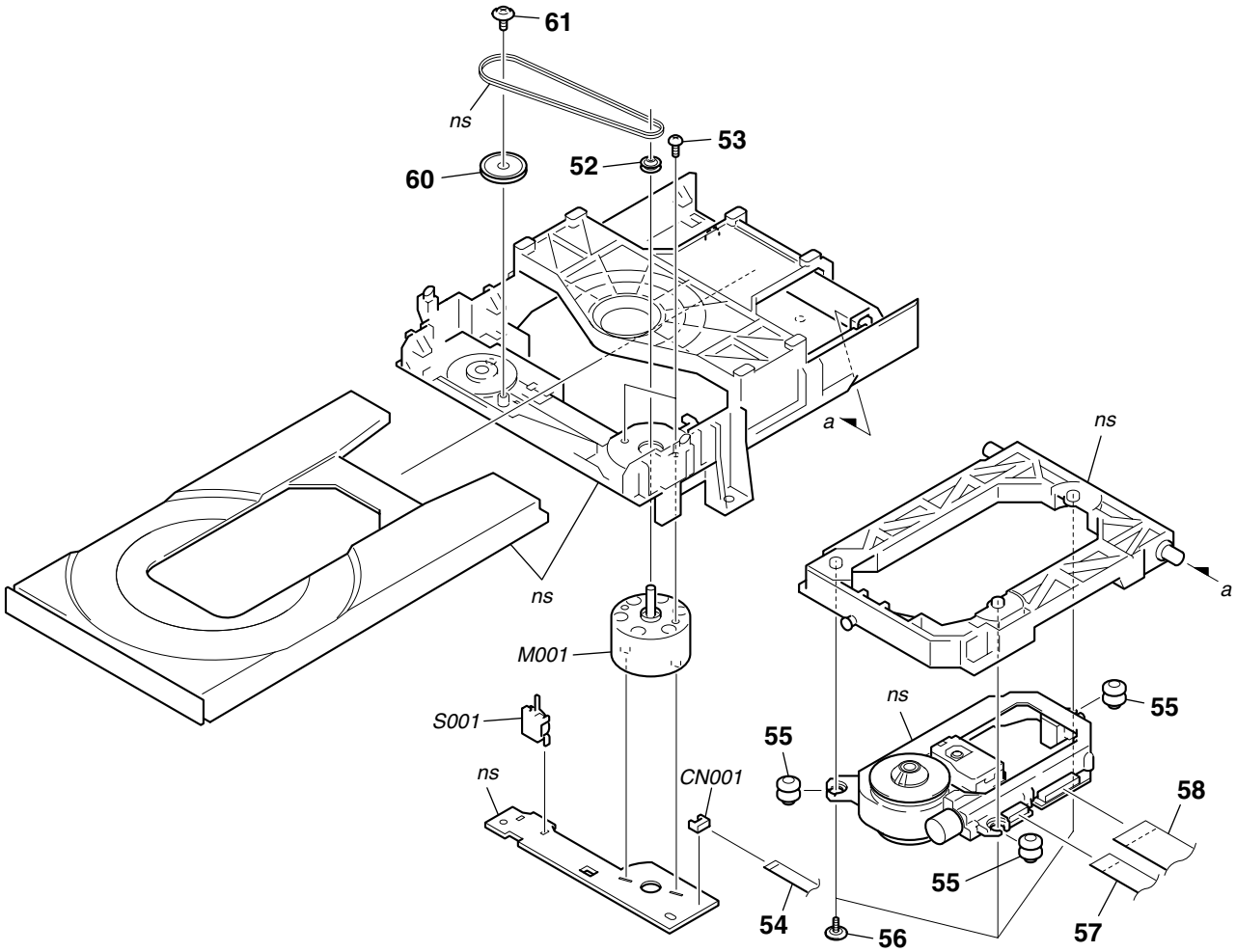


Ref. No.	Part No.	Description	Remarks
1	X-3952-267-1	PANEL ASSY,FRONT (NS415:ME5,AUS)	
1	X-3952-268-1	PANEL ASSY,FRONT (NS415:US,CND)	
1	X-3952-269-1	PANEL ASSY,FRONT (NS315:US1,US3,US4,CND1,PX)	
1	X-3952-270-1	PANEL ASSY,FRONT (NS315:US2,CND2)	
1	X-3952-271-1	PANEL ASSY,FRONT (NS305:ME2,EA,ME5,AUS,HK,KR)	
1	X-3952-272-1	PANEL ASSY,FRONT (NS305:SP,TW)	
1	X-3952-356-1	PANEL ASSY,FRONT (NS405:AEP1,AEP2)	
1	X-3952-357-1	PANEL ASSY,FRONT (NS405:AEP11,AEP21,UK)	
1	X-3952-358-1	PANEL ASSY,FRONT (NS305:AEP1,AEP2,RU2)	
1	X-3952-360-1	PANEL ASSY,FRONT (NS310)	
1	X-3952-484-1	PANEL ASSY,FRONT (NS410)	
1	A-6060-865-A	PANEL ASSY,FRONT (NS315:AR,BR)	
1	X-3952-354-1	PANEL ASSY,FRONT (NS315:MX1,E)	
1	X-3952-355-1	PANEL ASSY,FRONT (NS315:MX2)	
1	X-3952-359-1	PANEL ASSY,FRONT (NS305:AEP11,AEP21,UK,RU1)	
2	3-066-225-01	SONY BADGE (5-A) (NS315:US1,US3,US4,CND1,PX,MX2/NS415:ME5,AUS)	
2	3-066-225-11	SONY BADGE (5-A) (NS305:AEP1,AEP2,UK,RU,ME2,EA,ME5,AUS,HK,KR/NS310/NS315:US2,CND2,MX1,E,AR,BR/NS405/NS410/NS415:US,CND)	
2	4-963-404-41	SONY BADGE (5-A) (NS305:SP,TW)	
3	3-073-770-01	COVER,TRAY (NS315:US,CND,PX/NS415)	
3	3-073-770-11	COVER,TRAY (NS305:ME2,EA,ME5,AUS,HK,KR)	
3	3-073-770-21	COVER,TRAY (NS305:SP,TW)	
3	3-073-770-31	COVER,TRAY (NS315:MX,E,AR,BR)	
3	3-074-444-01	COVER,TRAY (NS305:AEP1,AEP2,RU2)	
3	3-074-444-11	COVER,TRAY (NS305:AEP11,AEP21,UK,RU1/NS310)	
3	3-074-481-01	COVER(EU),TRAY (NS405:AEP1,AEP2)	
3	3-074-481-11	COVER(EU),TRAY (NS405:AEP11,AEP21,UK/NS410)	
4	1-468-645-11	POWER BLOCK (NS305:TW/NS315:US,CND,MX/NS415:US,CND)	
4	1-468-646-11	POWER BLOCK (NS305:ME2,EA,ME5,AUS,HK,SP,KR/NS315:AR/NS415:ME5,AUS)	
4	1-468-647-11	POWER BLOCK (NS315:PX,E,BR)	
4	1-468-648-11	POWER BLOCK (NS305:AEP,AEP2,UK,RU/NS310/NS405/NS410)	
5	3-970-608-01	SUMITITE (B3), +BV	
10	3-073-182-01	BUSHING, CODE (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315:US1,US2,US3,CND,PX/NS415)	
10	3-073-182-11	BUSHING, CODE (NS305:AEP1,AEP2,UK,RU,NS310/NS315:US4,MX,E,AR,BR/NS405/NS410)	
⚠11	1-575-651-21	CORD, POWER (NS305:AEP1,AEP2,UK,RU,ME2,EA,ME5,HK,SP/NS310/NS315:PX,E,AR/NS405/NS410/NS415:ME5)	
⚠11	1-757-140-11	CORD, POWER (NS305:ME2,EA,ME5,SP/NS315:PX,E,AR,BR/NS415:ME5)	
⚠11	1-757-571-11	CORD, POWER (NS315:US,CND/NS415:US,CND)	
⚠11	1-782-752-31	CORD, POWER (NS305:KR)	
⚠11	1-783-531-11	CORD, POWER (NS315:MX)	
⚠11	1-783-531-31	CORD, POWER (NS315:US,CND,MX/NS415:US,CND)	
⚠11	1-790-390-41	CORD, POWER (NS305:TW)	
⚠11	1-790-588-11	CORD, POWER (NS305:AUS/NS415:AUS)	
⚠11	1-823-597-11	CORD, POWER (NS315:US,CND/NS415:US,CND)	
12	3-070-883-01	SCREW, TAPPING (NS305:AEP1,AEP2,RU2/NS315:US1,US3,US4,CND1,PX,MX2/NS405:AEP1,AEP2/NS415:ME5,AUS)	
12	3-070-883-11	SCREW, TAPPING (NS305:AEP11,AEP21,UK,RU1,ME2,EA,ME5,AUS,HK,SP,TW,KR/NS310/NS315:US2,CND2,MX1,E,AR,BR/NS405:AEP11,AEP21,UK/NS410/NS415:US,CND)	
13	3-073-832-31	CASE, UPPER (NS415:AUS)	
13	3-073-832-41	CASE, UPPER (NS305:EA,ME5,AUS,HK,KR/NS315:CND2/NS415:US,CND)	
13	3-073-832-51	CASE, UPPER (NS305:TW)	
13	3-074-466-21	CASE,UPPER (NS305:AEP1,AEP2/NS405:AEP1,AEP2)	
? 13	3-073-832-71	CASE, UPPER (NS315:MX1,E,AR,BR)	
14	3-970-608-51	SUMITITE (B3), +BV (NS305,NS310/NS315:US1,US2,US3,CND,PX,MX,E,AR,BR/NS405/NS410/NS415)	
15	1-961-634-11	PF-127 (HERNESS)	
16	1-961-632-11	FF-206 (NS415)	
17	1-477-167-11	REMOTE COMMANDER (RMT-D141A) (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315)	
17	1-477-168-11	REMOTE COMMANDER (RMT-D142A) (NS415:US,CND)	
17	1-477-168-41	REMOTE COMMANDER (RMT-D142O) (NS415:ME5,AUS)	
17	1-477-170-11	REMOTE COMMANDER (RMT-D142P) (NS310/NS405/NS410)	
18	3-072-138-01	LID, BATTERY (FOR REMOTE COMMANDER)	
19	3-073-777-11	EMBLEM,DVD (NS305:AEP1,AEP2,RU2)	
? 19	3-073-777-41	EMBLEM,DVD (NS305:AEP11,AEP21,UK,RU1,NS310/NS315:AR,BR)	
20	3-959-372-21	CUSHION, FOOT (NS315:AR,BR)	
20	X-395-017-51	CUSHION, FOOT (NS315:MX,E)	
22	1-823-831-11	FAE-9 (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-2. MECHANISM DECK SECTION

ns : not supplied



Ref. No.	Part No.	Description	Remarks
51	A-6060-	LOADING ASSY	
52	3-053-843-01	MOTOR PULLEY	
53	7-621-775-08	SCREW +P 2.6X3	
54	1-823-830-11	FMS-17 (FLEXIBLE FLAT CABLE)	
55	3-053-847-11	INSULATOR	
56	3-067-344-01	INSULATOR SCREW	
57	1-823-829-11	FMO-4 (FLEXIBLE FLAT CABLE)	
58	1-823-828-11	FMM-41 (FLEXIBLE FLAT CABLE)	
59			
60	3-053-841-01	PULLEY GEAR	
60	3-053-841-21	GEAR, PULLEY	
61	4-974-711-01	SCREW (2X5)(P TYIGHT),(+)PTTWH	
M001	1-763-790-11	MOTOR, DC (LOADING)	
S001	1-786-133-11	SWITCH, ROTARY	
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P	
	3-058-511-51	+BV IBR (NS315:US4)	

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
		AV-61BM (G) BOARD, COMPLETE (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR)			
		**********			
		AV-61BM (U) BOARD, COMPLETE (NS315:US,CND,PX,AR,BR)			
		**********			
		AV-61BR (E) BOARD, COMPLETE (NS305:AEP1,AEP2,UK,RU/NS310)			
		**********			
		AV-61BX (U) BOARD, COMPLETE (NS315:MX1,MX2,E)			
		**********			
		AV-61BY (U) BOARD, COMPLETE (NS315:US)			
		**********			
		AV-61SM (ME) BOARD, COMPLETE (NS415:ME5,AUS)			
		**********			
		AV-61SM (U) BOARD, COMPLETE (NS415:US,CND)			
		**********			
		AV-61SR (E) BOARD, COMPLETE (NS405/NS410)			
		**********			
		< CAPACITOR >			
C101	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-126-947-11	ELECT	47uF	20%	16V
C109	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C110	1-126-947-11	ELECT	47uF	20%	16V
C111	1-126-947-11	ELECT	47uF	20%	16V
C112	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)
C113	1-126-947-11	ELECT	47uF	20%	16V
C114	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C201	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C202	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C203	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C204	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C205	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C206	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-126-960-11	ELECT	1uF	20%	50V
C210	1-126-947-11	ELECT	47uF	20%	16V
C211	1-126-947-11	ELECT	47uF	20%	16V
C212	1-126-960-11	ELECT	1uF	20%	50V (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)
C213	1-126-934-11	ELECT	220uF	20%	16V
C215	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (NS305/NS310/NS405/NS410)
C216	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (NS305/NS310/NS405/NS410)
C222	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C223	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C224	1-126-947-11	ELECT	47uF	20%	16V
C227	1-126-947-11	ELECT	47uF	20%	16V
C228	1-126-947-11	ELECT	47uF	20%	16V
C229	1-126-947-11	ELECT	47uF	20%	16V
C242	1-126-924-11	ELECT	330uF	20%	6.3V
C244	1-126-947-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
CN102	1-815-149-11	CONNECTOR, FPC/FFC(1MM PIC)21P (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
* CN202	1-568-934-11	PIN, CONNECTOR 7P			
		< DIODE >			
D101	8-719-073-01	DIODE MA111-(K8).S0 (NS415:US,CND)			
D105	8-719-071-15	DIODE HZM6.8ZWA1TL (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)			
D106	8-719-071-15	DIODE HZM6.8ZWA1TL (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)			
D201	8-719-050-38	DIODE M1MA152WK-T1			
D202	8-719-050-37	DIODE M1MA152WA-T1			
D203	8-719-050-37	DIODE M1MA152WA-T1 (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
D205	8-719-073-01	DIODE MA111-(K8).S0			
D206	8-719-073-01	DIODE MA111-(K8).S0 (NS415:US,CND)			
		< IC >			
IC102	8-759-826-46	IC LA73051-TLM (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
IC102	8-759-826-45	IC LA73050-TLM (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)			
IC103	8-759-662-86	IC NJM79M05DL1A(TE2)			
IC204	8-749-017-31	IC GP1FA550TZ (NS405/NS410/NS415)			
IC204	8-749-923-04	IC TOTX178A (NS405/NS410/NS415)			
IC201	6-701-937-01	IC TJM4558CDT (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
IC201	8-759-909-71	IC BA4558F-E2 (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)			
IC203	8-759-711-59	IC NJM78L05UA-TE1			

Ref. No.	Part No.	Description	Remarks
		< JACK >	
J102	1-816-668-11	JACK, PIN (3P) (NS315:US4)	
J102	1-815-360-11	JACK, PIN 3P (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
J103	1-816-663-11	CONNECTOR, S TERMINAL (4P) (NS315:US4)	
J103	1-794-198-11	CONNECTOR, S TERMINAL (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
J104	1-815-362-21	JACK, PIN (6P) (NS415:US,CND)	
J104	1-815-358-11	JACK, PIN (3P) (NS305/NS310/NS315/NS405/NS410/NS415:ME5,AUS)	
J201	1-793-446-21	JACK, PIN 1P	
		< JUMPER RESISTOR >	
JR100	1-216-295-91	SHORT 0	
JR101	1-216-295-91	SHORT 0	
JR102	1-216-295-91	SHORT 0	
JR104	1-216-295-91	SHORT 0	
JR105	1-216-295-91	SHORT 0	
JR106	1-216-295-91	SHORT 0	
JR107	1-216-295-91	SHORT 0	
JR108	1-216-295-91	SHORT 0	
JR109	1-216-295-91	SHORT 0	
JR110	1-216-295-91	SHORT 0	
JR111	1-216-295-91	SHORT 0	
JR112	1-216-295-91	SHORT 0	
JR113	1-216-295-91	SHORT 0	
		< COIL >	
L101	1-412-064-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q104	8-729-421-19	TRANSISTOR MUN2213T1 (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
Q105	8-729-424-08	TRANSISTOR MUN2111T1 (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
Q106	8-729-216-22	TRANSISTOR 2SA1162-YG-TE85L (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
Q201	8-729-049-31	TRANSISTOR 2SB710A-RTX	
Q202	8-729-421-19	TRANSISTOR UN2213-TX	
Q203	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q204	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q205	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	
Q206	8-729-421-19	TRANSISTOR UN2213-TX (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
Q207	6-550-137-01	TRANSISTOR SD1938(F)-ST(TX).SO	
Q208	6-550-137-01	TRANSISTOR SD1938(F)-ST(TX).SO	
Q209	8-729-027-53	TRANSISTOR DTC124TKA-T146 (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
Q210	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
Q211	8-729-230-49	TRANSISTOR 2SC2712-YG-TE85L	
Q216	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	

Ref. No.	Part No.	Description	Remarks
		< RESISTOR >	
R121	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R122	1-216-049-11	RES-CHIP 1K 5% 1/10W (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
R126	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
R127	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
R128	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
R129	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R130	1-216-021-00	METAL CHIP 68 5% 1/10W	
R133	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R134	1-216-021-00	METAL CHIP 68 5% 1/10W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS405/NS410/NS415)	
R153	1-215-860-11	METAL OXIDE 33 5% 1W	
R154	1-216-295-91	SHORT 0 (NS305/NS310/NS315/NS405/NS410/NS415:ME5,AUS)	
R201	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R202	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R203	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R204	1-208-798-11	METAL CHIP 4.7K 0.5% 1/10W	
R205	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R206	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R207	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R208	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R209	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R210	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R211	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R212	1-208-800-11	METAL CHIP 5.6K 0.5% 1/10W	
R213	1-216-065-91	RES-CHIP 4.7K 5% 1/10W	
R214	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
R216	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R217	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R218	1-216-097-11	RES-CHIP 100K 5% 1/10W	
R219	1-216-105-91	RES-CHIP 220K 5% 1/10W	
R220	1-216-041-00	METAL CHIP 470 5% 1/10W	
R221	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R222	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R224	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R225	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R226	1-216-041-00	METAL CHIP 470 5% 1/10W	
R227	1-216-041-00	METAL CHIP 470 5% 1/10W	
R228	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R229	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R230	1-216-089-91	RES-CHIP 47K 5% 1/10W	
R231	1-216-073-91	RES-CHIP 10K 5% 1/10W (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	

Ref. No.	Part No.	Description			Remarks
R232	1-216-073-91	RES-CHIP	10K	5%	1/10W
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
R233	1-216-089-91	RES-CHIP	47K	5%	1/10W
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
R234	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R235	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)			
R236	1-216-073-91	RES-CHIP	10K	5%	1/10W
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
R237	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
R238	1-216-097-11	RES-CHIP	100K	5%	1/10W
R239	1-216-097-11	RES-CHIP	100K	5%	1/10W
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)			
R240	1-216-041-00	METAL CHIP	470	5%	1/10W
R241	1-216-041-00	METAL CHIP	470	5%	1/10W
R244	1-216-089-91	RES-CHIP	47K	5%	1/10W
					(NS415:US,CND)
R245	1-216-089-91	RES-CHIP	47K	5%	1/10W
					(NS415:US,CND)
R249	1-216-033-00	METAL CHIP	220	5%	1/10W
R251	1-216-021-00	METAL CHIP	68	5%	1/10W
R252	1-216-073-91	RES-CHIP	10K	5%	1/10W
R253	1-216-049-11	RES-CHIP	1K	5%	1/10W
R254	1-216-049-11	RES-CHIP	1K	5%	1/10W
R256	1-216-049-11	RES-CHIP	1K	5%	1/10W
R284	1-216-295-91	SHORT	0		
		(NS305/NS310/NS315/NS405/NS410/NS415:ME5,AUS)			
R285	1-216-295-91	SHORT	0		
		(NS305/NS310/NS315/NS405/NS410/NS415:ME5,AUS)			
R286	1-216-295-91	SHORT	0		
		< RELAY >			
RY102	1-755-037-11	RELAY (NS415:US,CND)			
RY201	1-755-466-11	RELAY (PLASTIC SEAL) (NS415:US,CND)			
		ER-14R BOARD, COMPLETE			
					(European model only)
		**********			
		< CAPACITOR >			
C901	1-126-947-11	ELECT	47uF	20%	16V
C902	1-126-947-11	ELECT	47uF	20%	16V
C903	1-126-947-11	ELECT	47uF	20%	16V
C905	1-126-947-11	ELECT	47uF	20%	16V
C907	1-126-947-11	ELECT	47uF	20%	16V
C913	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C914	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C943	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C962	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C963	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN901	1-815-387-11	CONNECTOR, FPC/FFC 21P			

Ref. No.	Part No.	Description			Remarks
		< DIODE >			
D901	8-719-073-01	DIODE MA111-(K8).S0			
D907	8-719-050-37	DIODE M1MA152WA-T1			
D917	8-719-067-40	DIODE STZ6.8N-T146			
D918	8-719-067-40	DIODE STZ6.8N-T146			
D919	8-719-067-40	DIODE STZ6.8N-T146			
D920	8-719-067-40	DIODE STZ6.8N-T146			
D929	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D930	8-719-977-40	DIODE UDZ-TE-17-13B			
		< FERRITE BEAD >			
FB907	1-414-766-22	FERRITE	0UH		
FB908	1-414-766-22	FERRITE	0UH		
FB909	1-414-766-22	FERRITE	0UH		
FB910	1-414-766-22	FERRITE	0UH		
		< IC >			
IC901	8-759-826-47	IC LA73052-TLM			
		< JUMPER RESISTOR >			
JR901	1-216-295-91	SHORT	0		
JR902	1-216-295-91	SHORT	0		
JR905	1-216-295-91	SHORT	0		
JR906	1-216-295-91	SHORT	0		
JR907	1-216-295-91	SHORT	0		
JR908	1-216-295-91	SHORT	0		
JR909	1-216-295-91	SHORT	0		
JR910	1-216-295-91	SHORT	0		
JR911	1-216-295-91	SHORT	0		
JR912	1-216-295-91	SHORT	0		
JR913	1-216-295-91	SHORT	0		
JR914	1-216-295-91	SHORT	0		
JR915	1-216-295-91	SHORT	0		
		< COIL >			
L905	1-412-064-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q901	8-729-421-19	TRANSISTOR	UN2213-TX		
Q902	8-729-422-27	TRANSISTOR	2SD601A-QRS-TX		
Q903	8-729-424-08	TRANSISTOR	UN2111-TX		
Q906	8-729-421-19	TRANSISTOR	UN2213-TX		
Q907	8-729-424-08	TRANSISTOR	UN2111-TX		
Q908	8-729-421-22	TRANSISTOR	UN2211-TX		
		< RESISTOR >			
R902	1-216-295-91	SHORT	0		
R905	1-216-089-91	RES-CHIP	47K	5%	1/10W
R906	1-216-089-91	RES-CHIP	47K	5%	1/10W
R907	1-216-089-91	RES-CHIP	47K	5%	1/10W
R908	1-216-105-91	RES-CHIP	220K	5%	1/10W
R909	1-216-037-00	METAL CHIP	330	5%	1/10W
R910	1-216-037-00	METAL CHIP	330	5%	1/10W
R911	1-216-037-00	METAL CHIP	330	5%	1/10W
R912	1-216-037-00	METAL CHIP	330	5%	1/10W
R914	1-216-055-00	METAL CHIP	1.8K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R915	1-216-045-00	METAL CHIP	680	5%	1/10W
R916	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R917	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R918	1-216-021-00	METAL CHIP	68	5%	1/10W
R924	1-216-041-00	METAL CHIP	470	5%	1/10W
R926	1-216-041-00	METAL CHIP	470	5%	1/10W
R927	1-216-021-00	METAL CHIP	68	5%	1/10W
R928	1-216-021-00	METAL CHIP	68	5%	1/10W
R929	1-216-021-00	METAL CHIP	68	5%	1/10W
R939	1-216-017-91	RES-CHIP	47	5%	1/10W
R950	1-216-081-00	METAL CHIP	22K	5%	1/10W
R957	1-414-233-22	FERRITE	0UH		
R958	1-414-233-22	FERRITE	0UH		

FL-126 (E) BOARD, COMPLETE
(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)
****
FL-126X BOARD, COMPLETE (NS315:MX,E)
****

< CONNECTOR >

CN301	1-564-013-11	PIN, CONNECTOR 3P			

< DIODE >

D301	6-500-176-01	DIODE EB3804X-TP-J555K			

< RESISTOR >

R301	1-216-033-00	METAL CHIP	220	5%	1/10W

IF-89BM (U) BOARD, COMPLETE
(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/
NS315:US,CND,PX,AR,BR)
****
IF-89BX (U) BOARD, COMPLETE
(NS315:MX1,MX2,E)
****
IF-89BY (U) BOARD, COMPLETE (NS315:US4)
****
IF-89SM (U) BOARD, COMPLETE (NS415)
****
IF-89BR (E) BOARD, COMPLETE
(NS305:AEP1,AEP2,UK,RU/NS310)
****
IF-89SR (E) BOARD, COMPLETE
(NS405,NS410)
****

< CAPACITOR >

C401	1-126-947-11	ELECT	47uF	20%	16V
C402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C404	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C408	1-119-774-11	ELECT	100uF	20%	16V
C409	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C416	1-104-665-11	ELECT	100uF	20%	25V
C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C421	1-128-551-11	ELECT	22uF	20%	25V
C423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C424	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C425	1-128-551-11	ELECT	22uF	20%	25V
C426	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C427	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C428	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

< CONNECTOR >

CN401	1-506-478-11	PIN, CONNECTOR 13P			
* CN405	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P			
	(NS305/NS310/NS315:US,CND,PX,AR,BR/NS405/NS410/NS415)				
CN406	1-564-002-11	PIN, CONNECTOR 3P (NS415)			

< DIODE >

D402	8-719-064-11	DIODE SPR-325MVW (NS405/NS410/NS415)			

< IC >

IC403	6-701-875-01	IC LMS8117ADTX-1.8/NOPB			
IC404	6-801-258-01	IC 86CK74AFG-3ND0(M			
IC405	8-759-684-35	IC S-80830ANUP-EDT-T2			
IC406	6-600-054-01	IC GP1UD24SYK			
IC407	6-701-835-01	IC AN13990A-NML			

< JUMPER RESISTOR >

JR401	1-216-295-91	SHORT	0		
JR402	1-216-295-91	SHORT	0		
JR403	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR404	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR405	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR406	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR407	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR408	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR409	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR410	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR411	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR412	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR413	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR414	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				
JR415	1-216-295-91	SHORT	0		
	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)				

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Ref. No.	Part No.	Description	Remarks
JR416	1-216-295-91	SHORT 0	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
JR417	1-216-295-91	SHORT 0	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
JR418	1-216-295-91	SHORT 0	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
JR419	1-216-295-91	SHORT 0	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
JR420	1-216-295-91	SHORT 0	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
		< FLUORESCENT INDICATOR >	
ND401	1-518-805-11	TUBE, FLUORESCENT INDICATOR	(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)
ND401	1-518-807-11	TUBE, FLUORESCENT INDICATOR	(NS305:AEP1,AEP2,UK,RU/NS310/NS405:AEP1,AEP2,UK/NS410)
		< IC LINK >	
⚠PS401	1-576-509-21	RINK, IC	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
⚠PS402	1-576-508-21	RINK, IC	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
		< TRANSISTOR >	
Q404	8-729-048-28	TRANSISTOR 2SD1766-T100-QR	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
Q405	8-729-424-08	TRANSISTOR UN2111-TX	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
		< RESISTOR >	
R401	1-216-017-91	RES-CHIP 47 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R402	1-216-097-11	RES-CHIP 100K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R405	1-216-081-00	METAL CHIP 22K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R406	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R407	1-216-013-00	METAL CHIP 33 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R408	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R409	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R410	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	(NS405:AEP1,AEP2,UK/NS410/NS415)
R411	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R412	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R413	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R414	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R415	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R416	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R417	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R418	1-216-027-00	METAL CHIP 120 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R424	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R425	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R426	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R428	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R429	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R430	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R432	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R434	1-216-097-11	RES-CHIP 100K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R436	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS405:AEP1,AEP2,UK/NS410/NS415)
R437	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315)
R438	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R441	1-216-073-91	RES-CHIP 10K 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R442	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R443	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R444	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R445	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R446	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R447	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R448	1-216-025-11	RES-CHIP 100 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R452	1-216-029-00	METAL CHIP 150 5% 1/10W	(NS405:AEP1,AEP2,UK/NS410/NS415)
R453	1-215-857-11	METAL OXIDE 10 5% 1W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R455	1-216-427-00	METAL OXIDE 120 5% 1W	(/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R456	1-216-427-00	METAL OXIDE 120 5% 1W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R457	1-216-029-00	METAL CHIP 150 5% 1/10W	(NS405:AEP1,AEP2,UK/NS410/NS415)
R458	1-216-081-00	METAL CHIP 22K 5% 1/10W	(NS405:AEP1,AEP2,UK/NS410/NS415)
R459	1-216-298-00	METAL CHIP 2.2 5% 1/10W	(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)
R460	1-216-073-91	RES-CHIP 10K 5% 1/10W	
		< SWITCH >	
S401	1-771-349-21	SWITCH, KEYBOARD	
S402	1-771-349-21	SWITCH, KEYBOARD	
S403	1-771-349-21	SWITCH, KEYBOARD	
S404	1-771-349-21	SWITCH, KEYBOARD	
S405	1-771-349-21	SWITCH, KEYBOARD	

Ref. No.	Part No.	Description	Remarks
S406	1-771-349-21	SWITCH, KEYBOARD	
S407	1-771-349-21	SWITCH, KEYBOARD	
S408	1-771-349-21	SWITCH, KEYBOARD	
S409	1-771-349-21	SWITCH, KEYBOARD (NS405/NS410/NS415)	
		< VIBRATOR >	
X401	1-781-472-21	VIBRATOR, CERAMIC (8MHz)	
		MB-103BM (GA) BOARD, COMPLETE (NS305:HK,SP,TW,KR)	
		**********	
		MB-103BM (IN) BOARD, COMPLETE (NS305:ME2)	
		**********	
		MB-103BM (ME) BOARD, COMPLETE (NS305:EA,ME5)	
		**********	
		MB-103BM (OC) BOARD, COMPLETE (NS305:AUS)	
		**********	
		MB-103BM (UC) BOARD, COMPLETE (NS315:US,CND,PX)	
		**********	
		MB-103BR (E1) BOARD, COMPLETE (NS305:AEP1,UK/NS310:AEP1)	
		**********	
		MB-103BR (E2) BOARD, COMPLETE (NS305:AEP2/NS310:AEP2)	
		**********	
		MB-103BR (RU) BOARD, COMPLETE (NS305:RU)	
		**********	
		MB-103BX (LA) BOARD, COMPLETE (NS315:MX1,MX2,E,AR,BR)	
		**********	
		MB-103BY (U) BOARD, COMPLETE (NS315:US4)	
		**********	
		MB-103SM (ME) BOARD, COMPLETE (NS415:ME5)	
		**********	
		MB-103SM (OC) BOARD, COMPLETE (NS415:AUS)	
		**********	
		MB-103SM (UC) BOARD, COMPLETE (NS415:US,CND)	
		**********	
		MB-103SR (E1) BOARD, COMPLETE (NS405:AEP1,UK/NS410:AEP1)	
		**********	
		MB-103SR (E2) BOARD, COMPLETE (NS405:AEP2/NS410:AEP2)	
		**********	
		< CAPACITOR >	
C102	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C103	1-126-209-11	ELECT CHIP 100uF 20% 4V	
C104	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C105	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C106	1-162-916-11	CERAMIC CHIP 12PF 5% 50V (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	

Ref. No.	Part No.	Description	Remarks
C106	1-162-914-11	CERAMIC CHIP 9PF 0.50PF 50V (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
C107	1-162-917-11	CERAMIC CHIP 15PF 5% 50V (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
C107	1-162-914-11	CERAMIC CHIP 9PF 0.50PF 50V (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)	
C108	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C109	1-126-209-11	ELECT CHIP 100uF 20% 4V	
C110	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C111	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C114	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C118	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C120	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C121	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C122	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C125	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C126	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C127	1-126-204-11	ELECT CHIP 47uF 20% 16V	
C128	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C201	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C202	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C203	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C204	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C210	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C211	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C212	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C213	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C214	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C215	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C216	1-164-230-11	CERAMIC CHIP 220PF 5% 50V	
C218	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C219	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C220	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C221	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C225	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C226	1-164-230-11	CERAMIC CHIP 220PF 5% 50V	
C228	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C229	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C230	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C232	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C233	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C234	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C235	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C236	1-164-739-11	CERAMIC CHIP 560PF 5% 50V	
C238	1-124-779-00	ELECT CHIP 10uF 20% 16V	
C240	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
C241	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C242	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C243	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C244	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C245	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C246	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	
C247	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C248	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C249	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C250	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C251	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	

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Ref. No.	Part No.	Description			Remarks
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C253	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C256	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C257	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C259	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C262	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C263	1-124-779-00	ELECT CHIP	10uF	20%	16V
C264	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C265	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C270	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C271	1-126-204-11	ELECT CHIP	47uF	20%	16V
C272	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C273	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C305	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C308	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C310	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C313	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C316	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C317	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C318	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C320	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C322	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C330	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C331	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C332	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C335	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remarks
C401	1-124-779-00	ELECT CHIP	10uF	20%	16V
C402	1-124-779-00	ELECT CHIP	10uF	20%	16V
C403	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C404	1-126-193-11	ELECT	1uF	20%	50V
C405	1-126-246-11	ELECT CHIP	220uF	20%	4V
C406	1-124-779-00	ELECT CHIP	10uF	20%	16V
C407	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C419	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C420	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C429	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C435	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C439	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C441	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		(NS305/NS310/NS405/NS410/NS415:ME5,AUS)			
C442	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		(NS305/NS310/NS405/NS410/NS415:ME5,AUS)			
C446	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C447	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		(NS305/NS310/NS405/NS410/NS415:ME5,AUS)			
C449	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C602	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C603	1-124-779-00	ELECT CHIP	10uF	20%	16V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
* CN102	1-770-154-11	PIN, CONNECTOR (PC BOARD) 6P			
* CN103	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P			
CN203	1-815-507-21	CONNECTOR, FFC/FPC 26P			
		< FERRITE BEAD >			
FB103	1-469-324-21	FERRITE	0UH		
FB104	1-469-324-21	FERRITE	0UH		
FB105	1-469-324-21	FERRITE	0UH		
FB106	1-469-324-21	FERRITE	0UH		
FB107	1-469-324-21	FERRITE	0UH		
FB108	1-469-324-21	FERRITE	0UH		
FB109	1-469-324-21	FERRITE	0UH		
FB111	1-469-324-21	FERRITE	0UH		
FB602	1-414-226-21	FERRITE	0UH		
FB603	1-414-226-21	FERRITE	0UH		

Ref. No.	Part No.	Description	Remarks
		< FILTER >	
FL101	1-234-177-21	FILTER, CHIP EMI	
FL102	1-234-177-21	FILTER, CHIP EMI	
FL103	1-234-177-21	FILTER, CHIP EMI	
FL104	1-234-177-21	FILTER, CHIP EMI	
FL105	1-234-177-21	FILTER, CHIP EMI	
FL106	1-234-177-21	FILTER, CHIP EMI	
FL109	1-233-893-21	FILTER, CHIP EMI	
FL110	1-234-177-21	FILTER, CHIP EMI	
FL201	1-234-177-21	FILTER, CHIP EMI	
FL402	1-234-177-21	FILTER, CHIP EMI	
FL403	1-234-177-21	FILTER, CHIP EMI	
FL404	1-234-177-21	FILTER, CHIP EMI	
		< IC >	
IC101	8-759-641-86	IC BR24C16F-E2 (NS405/NS410/NS415)	
IC101	8-759-714-06	IC M24C16-WMN6T(A)	(NS405/NS410/NS415)
IC103	6-701-879-01	IC CY24233ZCT	(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)
IC103	6-701-877-01	IC SM8707EV-G-E2	(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)
IC104	6-701-837-01	IC MB91307RPFV-G-BND-E1	
IC106	6-801-942-01	IC MBM29LV160BE-90TN-D006 (NS315:US4)	
IC106	6-801-941-01	IC MBM29LV160BE-90TN-D005	(NS305:AEP1,UK/NS310:AEP1/NS405:AEP1,UK/NS410:AEP1)
IC106	8-759-689-92	IC MBM29LV160BE-90TN	(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315:US,CND,PX/NS415)
IC107	6-801-933-01	IC MR27V1602E-6G2TPZ	(NS315:MX1,MX2,E,AR,BR)
IC201	6-701-700-01	IC SP3728ACB	
IC201	8-759-828-02	IC SP3728AC	(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)
IC202	6-701-878-01	IC FAN8034L	
IC301	6-701-876-01	IC CXD9703R	
IC302	8-759-599-45	IC MM1385ENLE	
IC303	6-701-969-01	IC K4F151612D-UL60T	
IC401	6-702-300-01	IC TK11118CSCL-G	
IC402	8-759-599-45	IC MM1385ENLE	
IC403	8-752-416-45	IC CXD1935Q	
IC404	6-700-353-01	IC MT48LC1M16A1TG-6STR	
IC405	6-700-353-01	IC MT48LC1M16A1TG-6STR	(NS305/NS310/NS405/NS410/NS415:ME5,AUS)
IC601	6-701-565-01	IC CXD9627A-E2	
		< COIL >	
L101	1-412-028-11	INDUCTOR CHIP 4.7uH	
L201	1-412-031-11	INDUCTOR CHIP 47uH	
L202	1-412-031-11	INDUCTOR CHIP 47uH	
		< TRANSISTOR >	
Q201	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	
Q202	8-729-903-46	TRANSISTOR 2SB1132-T100-QR	

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R103	1-216-809-11	METAL CHIP	100	5%	1/16W
R104	1-216-809-11	METAL CHIP	100	5%	1/16W
R105	1-216-809-11	METAL CHIP	100	5%	1/16W
R106	1-216-809-11	METAL CHIP	100	5%	1/16W
R108	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W
R111	1-216-809-11	METAL CHIP	100	5%	1/16W
R112	1-216-809-11	METAL CHIP	100	5%	1/16W
R113	1-216-837-11	METAL CHIP	22K	5%	1/16W
R114	1-216-821-11	METAL CHIP	1K	5%	1/16W (NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)
R114	1-216-864-11	METAL CHIP	0	5%	1/16W (NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315/NS415)
R116	1-216-801-11	METAL CHIP	22	5%	1/16W
R117	1-216-821-11	METAL CHIP	1K	5%	1/16W
R118	1-216-845-11	METAL CHIP	100K	5%	1/16W
R119	1-216-845-11	METAL CHIP	100K	5%	1/16W
R120	1-216-821-11	METAL CHIP	1K	5%	1/16W
R121	1-216-821-11	METAL CHIP	1K	5%	1/16W
R123	1-216-833-11	METAL CHIP	10K	5%	1/16W
R124	1-216-833-11	METAL CHIP	10K	5%	1/16W
R128	1-216-809-11	METAL CHIP	100	5%	1/16W
R129	1-216-809-11	METAL CHIP	100	5%	1/16W
R130	1-216-809-11	METAL CHIP	100	5%	1/16W
R131	1-216-809-11	METAL CHIP	100	5%	1/16W
R132	1-216-864-11	METAL CHIP	0	5%	1/16W
R133	1-216-864-11	METAL CHIP	0	5%	1/16W
R134	1-216-801-11	METAL CHIP	22	5%	1/16W
R136	1-216-801-11	METAL CHIP	22	5%	1/16W
R137	1-216-801-11	METAL CHIP	22	5%	1/16W
R139	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R141	1-216-833-11	METAL CHIP	10K	5%	1/16W
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W
R156	1-216-833-11	METAL CHIP	10K	5%	1/16W
R157	1-216-864-11	METAL CHIP	0	5%	1/16W
R159	1-216-864-11	METAL CHIP	0	5%	1/16W
R160	1-216-864-11	METAL CHIP	0	5%	1/16W
R162	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R163	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R164	1-216-081-00	METAL CHIP	22K	5%	1/10W (NS315:MX1,MX2,E,AR,BR)
R164	1-216-069-00	METAL CHIP	6.8K	5%	1/10W (NS305:AEP2/NS310:AEP2/NS405:AEP2/NS410:AEP2)
R164	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (NS305:RU)
R164	1-216-075-00	METAL CHIP	12K	5%	1/10W (NS305:AEP1,UK/NS310:AEP1/NS405:AEP1,UK/NS410:AEP1)
R164	1-216-041-00	METAL CHIP	470	5%	1/10W (NS305:AUS/NS415:AUS)
R164	1-216-047-91	RES-CHIP	820	5%	1/10W (NS305:EA,ME5/NS415:ME5)
R164	1-216-654-11	METAL CHIP	1.3K	0.5%	1/10W (NS305:ME2)
R164	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (NS305:HK,SP,TW,KR)

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Ref. No.	Part No.	Description			Remarks
R165	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R166	1-216-089-91	RES-CHIP	47K	5%	1/10W
					(NS405/NS410/NS415)
R168	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R169	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
					(NS305:RU)
R169	1-216-089-91	RES-CHIP	47K	5%	1/10W
					(NS305:AEP1,AEP2,UK,ME2,EA,ME5/ NS310/NS405/NS410/NS415:ME5)
R169	1-216-075-00	METAL CHIP	12K	5%	1/10W
					(NS305:AUS/NS315:MX,E,AR,BR/NS415:AUS)
R169	1-216-081-00	METAL CHIP	22K	5%	1/10W
					(NS305:HK,SP,TW,KR)
R176	1-216-864-11	METAL CHIP	0	5%	1/16W
R178	1-216-833-11	METAL CHIP	10K	5%	1/16W
R180	1-216-809-11	METAL CHIP	100	5%	1/16W
R181	1-216-864-11	METAL CHIP	0	5%	1/16W
R182	1-216-809-11	METAL CHIP	100	5%	1/16W
R183	1-216-809-11	METAL CHIP	100	5%	1/16W
R184	1-216-833-11	METAL CHIP	10K	5%	1/16W
R185	1-216-821-11	METAL CHIP	1K	5%	1/16W
R206	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R207	1-216-809-11	METAL CHIP	100	5%	1/16W
R210	1-216-815-11	METAL CHIP	330	5%	1/16W
R211	1-216-809-11	METAL CHIP	100	5%	1/16W
R212	1-216-809-11	METAL CHIP	100	5%	1/16W
R213	1-216-833-11	METAL CHIP	10K	5%	1/16W
R214	1-216-833-11	METAL CHIP	10K	5%	1/16W
R216	1-216-821-11	METAL CHIP	1K	5%	1/16W
R217	1-216-821-11	METAL CHIP	1K	5%	1/16W
R218	1-216-846-11	METAL CHIP	120K	5%	1/16W
R219	1-216-846-11	METAL CHIP	120K	5%	1/16W
R220	1-216-847-11	METAL CHIP	150K	5%	1/16W
R221	1-216-847-11	METAL CHIP	150K	5%	1/16W
R222	1-216-842-11	METAL CHIP	56K	5%	1/16W
R223	1-216-842-11	METAL CHIP	56K	5%	1/16W
R224	1-216-850-11	METAL CHIP	270K	5%	1/16W
R225	1-216-833-11	METAL CHIP	10K	5%	1/16W
R226	1-216-853-11	METAL CHIP	470K	5%	1/16W
R227	1-216-846-11	METAL CHIP	120K	5%	1/16W
R229	1-216-833-11	METAL CHIP	10K	5%	1/16W
R230	1-216-839-11	METAL CHIP	33K	5%	1/16W
R231	1-216-855-11	METAL CHIP	680K	5%	1/16W
R232	1-216-839-11	METAL CHIP	33K	5%	1/16W
R233	1-216-853-11	METAL CHIP	470K	5%	1/16W
R234	1-216-803-11	METAL CHIP	33	5%	1/16W
R235	1-216-809-11	METAL CHIP	100	5%	1/16W
R236	1-216-803-11	METAL CHIP	33	5%	1/16W
R238	1-216-839-11	METAL CHIP	33K	5%	1/16W
R239	1-216-839-11	METAL CHIP	33K	5%	1/16W
R240	1-216-839-11	METAL CHIP	33K	5%	1/16W
R241	1-216-839-11	METAL CHIP	33K	5%	1/16W
R242	1-216-849-11	METAL CHIP	220K	5%	1/16W
R243	1-216-853-11	METAL CHIP	470K	5%	1/16W
R244	1-216-821-11	METAL CHIP	1K	5%	1/16W
R245	1-216-841-11	METAL CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R246	1-216-809-11	METAL CHIP	100	5%	1/16W
R248	1-216-803-11	METAL CHIP	33	5%	1/16W
R249	1-216-803-11	METAL CHIP	33	5%	1/16W
R250	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R251	1-216-841-11	METAL CHIP	47K	5%	1/16W
R252	1-216-839-11	METAL CHIP	33K	5%	1/16W
R253	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R254	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R255	1-218-889-11	METAL CHIP	56K	0.5%	1/10W
R256	1-216-809-11	METAL CHIP	100	5%	1/16W
R259	1-216-833-11	METAL CHIP	10K	5%	1/16W
R260	1-216-834-11	METAL CHIP	12K	5%	1/16W
R261	1-216-833-11	METAL CHIP	10K	5%	1/16W
R262	1-216-815-11	METAL CHIP	330	5%	1/16W
R263	1-216-861-11	METAL CHIP	2.2M	5%	1/16W
R264	1-216-845-11	METAL CHIP	100K	5%	1/16W
R265	1-216-838-11	METAL CHIP	27K	5%	1/16W
R269	1-216-833-11	METAL CHIP	10K	5%	1/16W
R273	1-216-864-11	METAL CHIP	0	5%	1/16W
R301	1-216-295-91	SHORT	0		
R302	1-216-295-91	SHORT	0		
R303	1-216-821-11	METAL CHIP	1K	5%	1/16W
R311	1-216-809-11	METAL CHIP	100	5%	1/16W
R312	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R313	1-216-817-11	METAL CHIP	470	5%	1/16W
R314	1-216-817-11	METAL CHIP	470	5%	1/16W
R315	1-216-817-11	METAL CHIP	470	5%	1/16W
R316	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R317	1-216-833-11	METAL CHIP	10K	5%	1/16W
R318	1-216-817-11	METAL CHIP	470	5%	1/16W
R319	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R320	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
R321	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
R322	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
R323	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R324	1-216-833-11	METAL CHIP	10K	5%	1/16W
R325	1-218-867-11	RES-CHIP	6.8K	5%	1/10W
R326	1-216-833-11	METAL CHIP	10K	5%	1/16W
R327	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R328	1-216-838-11	METAL CHIP	27K	5%	1/16W
R329	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R330	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R331	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R332	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R333	1-216-847-11	METAL CHIP	150K	5%	1/16W
R334	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R335	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R336	1-216-833-11	METAL CHIP	10K	5%	1/16W
R346	1-216-833-11	METAL CHIP	10K	5%	1/16W
R347	1-216-833-11	METAL CHIP	10K	5%	1/16W
R348	1-216-833-11	METAL CHIP	10K	5%	1/16W
R349	1-216-833-11	METAL CHIP	10K	5%	1/16W
R351	1-216-295-91	SHORT	0		
R352	1-216-295-91	SHORT	0		
R358	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R359	1-216-833-11	METAL CHIP	10K	5%	1/16W
R360	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-216-295-91	SHORT	0		
		(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)			
R402	1-216-295-91	SHORT	0		
		(NS305/NS310/NS315/NS405:AEP1,AEP2,UK/NS410/NS415)			
R403	1-216-817-11	METAL CHIP	470	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W
R406	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R407	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R408	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R409	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R410	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R411	1-218-831-11	METAL CHIP	220	0.5%	1/10W
R412	1-216-833-11	METAL CHIP	10K	5%	1/16W
R413	1-218-867-11	RES-CHIP	6.8K	5%	1/10W
R414	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R423	1-216-833-11	METAL CHIP	10K	5%	1/16W
R426	1-216-833-11	METAL CHIP	10K	5%	1/16W
R430	1-216-797-11	METAL CHIP	10	5%	1/16W
R439	1-216-864-11	METAL CHIP	0	5%	1/16W
R601	1-216-809-11	METAL CHIP	100	5%	1/16W
R607	1-216-864-11	METAL CHIP	0	5%	1/16W
R608	1-216-864-11	METAL CHIP	0	5%	1/16W
R609	1-216-864-11	METAL CHIP	0	5%	1/16W
R612	1-216-864-11	METAL CHIP	0	5%	1/16W
R621	1-216-864-11	METAL CHIP	0	5%	1/16W
		(NS305/NS310/NS405/NS410/NS415:ME5,AUS)			
		< COMPOSITION CIRCUIT BLOCK >			
* RB102	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV401	1-223-583-11	RES, ADJ, CARBON 1K			
		< VIBRATOR >			
X101	1-795-174-11	VIBRATOR, CERAMIC (16.5MHz)			
X102	1-781-867-21	VIBRATOR, CRYSTAL (27MHz)			
		MS-81J MOUNT (NOT SUPPLIED)			
		**********			
		< CONNECTOR >			
* CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P			
		< SWITCH >			
S001	1-786-133-11	SWITCH, ROTARY			

Ref. No.	Part No.	Description	Remarks
		MISCELLANEOUS	
		**********	
4	1-468-645-11	POWER BLOCK	
		(NS305:TW/NS315:US,CND,MX/NS415:US,CND)	
4	1-468-646-11	POWER BLOCK	
		(NS305:ME2,EA,ME5,AUS,HK,SP,KR/NS315:AR/NS415:ME5,AUS)	
4	1-468-647-11	POWER BLOCK (NS315:PX,E,BR)	
4	1-468-648-11	POWER BLOCK	
		(NS305:AEP,AEP2,UK,RU/NS310/NS405/NS410)	
⚠11	1-575-651-21	CORD, POWER	
		(NS305:AEP1,AEP2,UK,RU,ME2,EA,ME5,HK,SP/NS310/NS315:PX,E,AR/NS405/NS410/NS415:ME5)	
⚠11	1-757-140-11	CORD, POWER	
		(NS305:ME2,EA,ME5,SP/NS315:PX,E,AR,BR/NS415:ME5)	
⚠11	1-757-571-11	CORD, POWER	
		(NS315:US,CND/NS415:US,CND)	
⚠11	1-782-752-31	CORD, POWER (NS305:KR)	
⚠11	1-783-531-11	CORD, POWER (NS315:MX)	
⚠11	1-783-531-31	CORD, POWER	
		(NS315:US,CND,MX/NS415:US,CND)	
⚠11	1-790-390-41	CORD, POWER (NS305:TW)	
⚠11	1-790-588-11	CORD, POWER (NS305:AUS/NS415:AUS)	
⚠11	1-823-597-11	CORD, POWER	
		(NS315:US,CND/NS415:US,CND)	
15	1-961-634-11	PF-127 (HARNESS)	
16	1-961-632-11	FF-206 (HARNESS) (NS415)	
22	1-823-831-11	FAE-9	
		(NS305:AEP1,AEP2,UK,RU/NS310/NS405/NS410)	
54	1-823-830-11	FMS-17 (FLEXIBLE FLAT CABLE)	
57	1-823-829-11	FMO-4 (FLEXIBLE FLAT CABLE)	
58	1-823-828-11	FMM-41 (FLEXIBLE FLAT CABLE)	
M001	1-763-790-11	MOTOR, DC (LOADING)	
S001	1-786-133-11	SWITCH, ROTARY	
CN001	1-815-412-11	CONNECTOR, FFC/FPC 5P	
		ACCESSORIES	
		**********	
	1-477-167-11	REMOTE COMMANDER (RMT-D141A)	
		(NS305:ME2,EA,ME5,AUS,HK,SP,TW,KR/NS315)	
	1-477-168-11	REMOTE COMMANDER (RMT-D142A)	
		(NS415:US,CND)	
	1-477-168-41	REMOTE COMMANDER (RMT-D142O)	
		(NS415:ME5,AUS)	
	1-477-170-11	REMOTE COMMANDER (RMT-D142P)	
		(NS310/NS405/NS410)	
	1-569-008-21	ADAPTOR, CONVERSION 2P	
		(NS305:EA/NS315:PX,E,AR)	
	1-751-271-11	CORD, CONNECTION	
		(NS305/NS310/NS315:US,CND,PX,MX,E/NS405/NS410/NS415)	
	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P	
		(NS305:UK,HK/NS405:UK)	
	1-823-364-21	CORD, CONNECTION	

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